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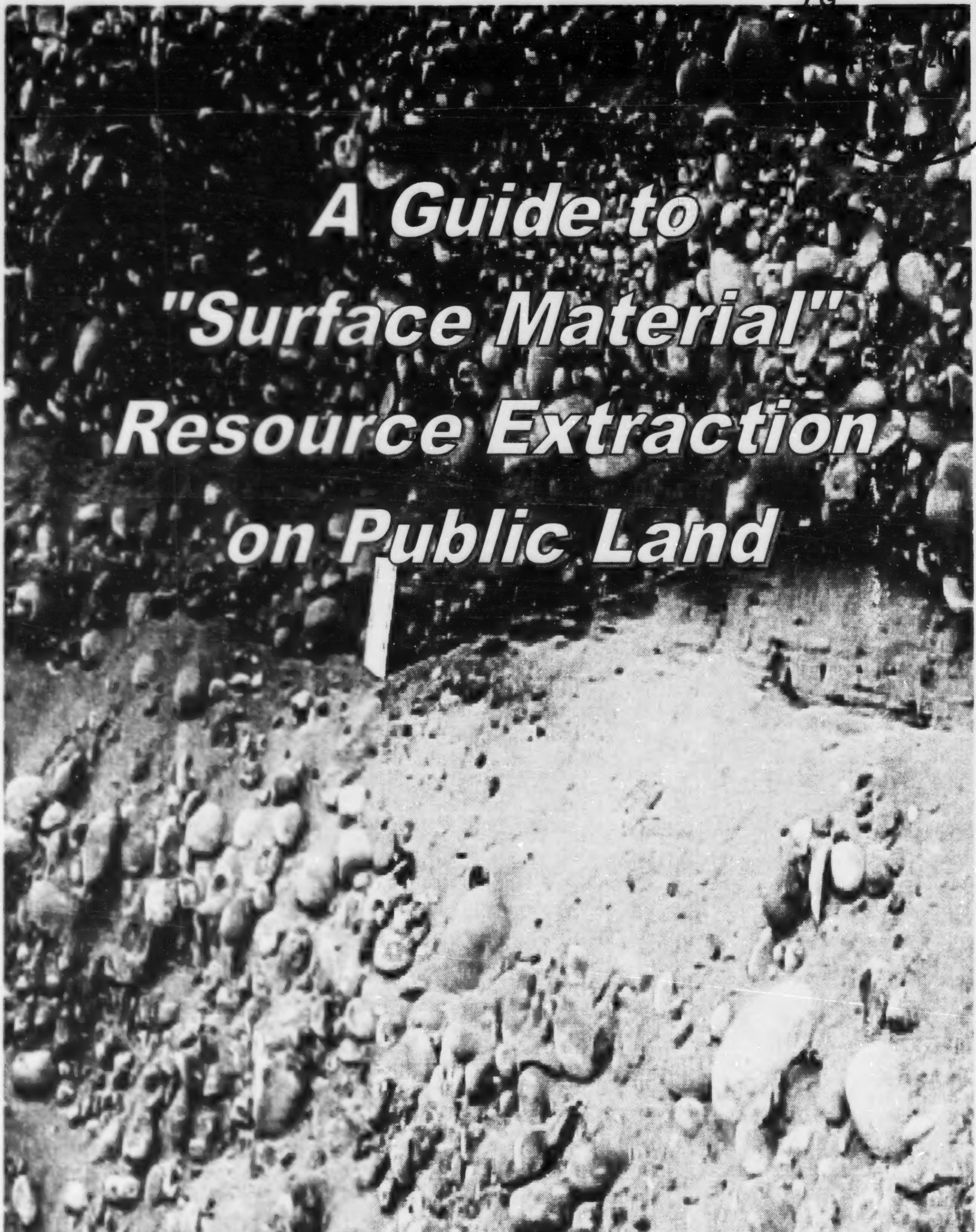
A Guide to "Surface Material" Resource Extraction on Public Land



101-02850/

A Guide to "Surface Material" Resource Extraction on Public Land

OPERATING PRINCIPLES

Land and Forest Service of Alberta Environment (AENV), and the Public Lands Division of Agriculture, Food and Rural Development (AFRD), promote the development of surface materials based on these principles:

- Orderly and efficient resource management through proper resource evaluation, planning, allocation and appropriate use of the surface material resources

and

- Environmental protection as an integral part in the planning and development of the surface material resources.

NOTE:
This Guide supercedes "Sifting Through Sand and Gravel" and those portions of "Guide for Pits" that refer to public land.
For updates to this publication refer to any AENV/AFRD office or from the hyperlink "Public Land Administration" AENV's website @ http://www.gov.ab.ca/env/land.html

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1.0 INTRODUCTION

This manual pertains to specific "Surface Materials", which include clay (manufacturing and non-manufacturing), marl, silt, sand and gravel. Clay, sand and gravel are in considerable demand throughout the construction industry for the development and maintenance of infrastructure as well as all other resource development activities (e.g. oil, timber, minerals and agriculture). Proper management practices will promote protection, continued access and orderly development of these essential non-renewable resources, a key component in the Province's prosperity.

Surface materials are formed under unique geological conditions associated with erosional forces of wind, water and ice. Usually they consist of unconsolidated deposits that sit above bedrock. However there has been an increase in the number of cases involving surface materials being mistaken for near surface minerals, which require separate rights conveyed through the Mines and Minerals Act. The procedure of obtaining rights to such minerals is beyond the scope of this manual.

The distribution of surface material deposits throughout the Province is variable and in many cases associated with sensitive environmental areas. Also land use/conservation, zoning designations or public opposition hamper access. However not allowing the development of strategically located surface material deposits has many environmental, economic, and safety implications associated with transporting the resources greater distances.

Therefore any land use or conservation decisions where surface materials are located will likely have a significant impact. The increasingly complex task of land management now requires a balanced scientific management approach. Proper resource detection, inventory, protection, overall regional natural resource assessment, balanced allocation and orderly development are essential results of this approach.

Benefits of this approach include:

- Development of available surface material resources with the least environmental impact,
- Lower construction costs due to reduced haul distances will contribute to lower tax rates and consumer costs,
- Significantly less creation of green house gases,
- Highway safety will be optimal and
- Highway maintenance will require less expenditure.

Under the Public Lands Act, Alberta Environment (AENV) and Agriculture, Food and Rural Development (AFRD) have assumed the mandate to manage surface material deposits on public land. In recognition of this responsibility, these departments have developed these guidelines within this manual in consultation with the sand and gravel industry, represented by the Alberta Sand and Gravel Association.

The guidelines create a business plan for the operator and promote improved management of these resources. Through proper planning, excavation operations will maximize the extraction of the surface material resources with the least environmental impact and create new land use/conservation opportunities (recreation, diverse fish and wildlife habitat).

The proper management of these essential resources will contribute significantly to the continued prosperity of Alberta.

1.1 Definitions and Abbreviations

1 to 100 Year Floodplain – see Floodplain

Active Channel – those parts of the bed and banks of a water body that are without terrestrial vegetation.[1]

A Horizon - a mineral horizon formed at or near the surface in the zone of removal of materials in solution and suspension, or maximum in situ accumulation of organic carbon, or both.

Aggregate – a composition of different surface materials.

Ancient Channel – a waterway, no longer containing moving surface water, where surface materials have accumulated due to a former water flow.

Associated Disposition – an existing activity on which fill material is imported from an adjoining or adjacent area.

B Horizon – a mineral horizon characterized by one or more of the following:

1. An enrichment in silica clay, iron, aluminum, or humus.
2. A prismatic or columnar structure that exhibits pronounced coatings or stainings associated with significant amounts of exchangeable sodium.
3. An alteration by hydrolysis, reduction or oxidation to give a change in color or structure from the horizons above or below, or both.[2]

Bank (legal) – "When surveying a natural body that is a body of water, the surveyor shall determine the position of the line where the bed and shore of the body of water cease and the line shall be referred to the bank of the body of water."

Bar – a mass of sand, gravel, or alluvium deposited by the flowing water on the bed of a waterbody.

Bed – "the land covered so long by water as to wrest it from vegetation or as to mark a distinct character on the vegetation where it extends into the water or on the soil itself."[3]

Borrow excavation – an excavation outside of a public road right-of-way made solely for the purposes of removing, opening up or proving borrow material for the construction of the sub-base of the roadway or it's associated infrastructure.

Borrow pit – a surface disturbance created from the removal of clay or silt for the purposes of fill material in infrastructure construction associated with public land disposition approvals. Two descriptive types of pits are dugouts and landscape pits.

Clay – a near surface deposit of sedimentary material with a composition of the material consisting of 50% or more of particles of a size of 2 micrometres or smaller having a depositional history that is not associated with the bedrock formation. (See Figure 1).

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[1] Code of Practice for Watercourse Crossings – Alberta Environment – 2000

[2] The Pedosphere and it's Dynamics: A Systems Approach to Soils Science – Noorallah Juma

[3] The Surveys Act (S.A. 1987 c.S-29.1)

Code of Practice for Pits – The Code does not apply to any operation given approval under the Public Lands Act.

Code of Practice for Watercourse Crossings - may apply to any activity that affect the bed and shore of a watercourse.

Colluvial – a deposit of angular rock fragments mixed in with sand and gravel.

Conservation - the planning, management and implementation of an activity with the objective of protecting the essential physical, chemical and biological characteristics of the environment against degradation.

Conservation & Reclamation Inspector - an AENV/AFRD employee who approves, monitors and enforces compliance of "designated activities on public land under the Public Lands Act.

Consolidated Bedrock – any solid rock exposed at the surface of the earth or overlain by unconsolidated material.

Control points - permanent reference markers which are used to measure all development parameters (area cleared of vegetation, topsoil stripping area, overburden stripping, pit size, reclaimed area).

Crevasse Filling – a linear ridge of sand and gravel that had accumulated in a crevasse of a glacier.[5]

Disturbance – includes the stripping of public land of any of the following: vegetation, topsoil, subsoil or surface materials. The amount of security deposit required for a lease or licence is based on the total area of disturbance.

Drumlin – a streamlined hill or ridge of glacial drift with long axis paralleling direction of flow of former glacier.

Dugout – a borrow pit that creates a surficial depression.

Electromagnetic survey – a geophysical method of detecting subsurface composition relative to ground conductivity.

Eolian – applied to surface material deposited and arranged by the wind.

Esker – a linear to sinuous mound of sand and gravel material deposited by watercourses within decaying glaciers.

Exploration – the subsurface evaluation of an area by mechanical equipment (creating a surface disturbance) to find and delineate a surface material deposit.

Field Officer – an AENV/AFRD employee who makes land use decisions based on provincial/regional management objectives and input from other resource managers; monitors and enforces compliance of activities on public land under the Public Lands Act.

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[5] Dictionary of Geological Terms – American Geological Institute -1962

Fill – clay or silt extracted from public land to be used for road or mineral surface lease construction.

Fish – fish used for domestic, sport and commercial purposes, and fish of special concern, including but not limited to rare, endangered, threatened or vulnerable species.[6]

Fish Habitat – all that portion of an ecosystem that provides for the sustenance of the fish populations. See Productive Capacity and HADD.

Floodplain – that portion of a river valley, adjacent to the river channel, which is built of sediments during the present regimen of the river and which is covered with water when the river overflows its banks at flood stages at least once every one hundred years.

Forest Officer – an AENV land manager.

Geophysical testing – using geophysical equipment (e.g. electromagnetic survey) to assess the subsurface structure.

Gravel – a near surface deposit of sedimentary material with a composition of the material consisting of 50% or more of particles of a size of size 5 millimetres or larger having a depositional history that is not associated with the bedrock formation. (See Figure 1).

Ground water – that part of the subsurface water which is in the zone of saturation.

HADD – Harmful Alteration, Disruption or Destruction of fish habitat. Harmful Alteration: any change to fish habitat that indefinitely reduces its capacity to support one or more life processes but does not eliminate the habitat. Disruption: a change to fish habitat that reduces its capacity to support one or more processes for a limited period. Destruction: any permanent change to fish habitat that completely eliminates its capacity to support one or more life processes.

Inchannel – see active channel

Industrial minerals – all minerals not classified as metallic minerals, energy minerals, fossils, gemstones or surface materials.

Instream – see active channel

Inspector – an AENV/AFRD employee who has the authority to issue reclamation certificates under the Environmental Protection and Enhancement Act.

Island – a tract of land, bounded around its perimeter by a legal bank as defined under Section 17 of the Surveys Act (see Bank).

Kame – a conical hill or short irregular ridge of gravel or sand deposited in contact with glacier ice.[7]

Lake deposit – surface materials that have formed through natural erosion and has accumulated in a basin that has been or is filled with water.

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[6] Code of Practice for Watercourse Crossings – Alberta Environment – 2000

[7] Dictionary of Geological Terms – American Geological Institute -1962

Landscape pit – a borrow pit that reduces or reshapes a topographical high feature.

Land manager – see field officer.

Legal Bank – see Bank

Manufacturing clay – has the same characteristics as "clay" however the material is processed by hand or machinery to form a saleable product (e.g. bricks, pottery).

Marl – a near surface deposit of sedimentary material with a composition of clay to silt grains of which 50% or more are calcium carbonate having a depositional history that is not associated with the bedrock formation.

Operator – the holder of the approval who is responsible to comply with the approval conditions.

Operating area – all the area that has been cleared/disturbed along with the area that will be disturbed in the next lease anniversary year. The security deposit amount is based on this area.

Outwash – Rock material deposited by melt-water streams beyond active glacier ice.

Preglacial – an accumulation of sand and gravel prior to the Larimide glacial advance which in the east half of the Province characterized by the lack any Canadian Shield material transported by the ice advance.

Productive Capacity – the natural capacity of habitats that comprise the aquatic environment to produce healthy fish that are safe for human consumption, or to support or produce the naturally occurring diversity of aquatic organisms upon which fish depend.[8]

Progressive reclamation – landscaping to final grade and replacing the soil are completed in the areas where the surface material resource has been depleted as the extraction operation continues in other areas.

Public Land Specialist – an AFRD land manager.

Reclamation – the reconstruction of slopes and landforms, replacement of overburden, reject material and topsoil and establishment of vegetation on a disturbed site. Reclamation must return equivalent land capability, or meet an approved alternate capability (e.g., upland to waterbody).

Reject Material – any material that is a by-product of processing the surface material.

Remote sensing - the science (and to some extent, art) of acquiring information about the Earth's surface without actually being in contact with it. This is done by sensing and recording reflected or emitted energy and processing, analyzing, and applying that information (e.g. air photography, satellite imagery).

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[8] Code of Practice for Watercourse Crossings – Alberta Environment - 2000

Resource manager – a government employee that is specialized in the evaluation and management of a particular natural resource (e.g. wildlife, vegetation, fish, water, land, historical, surface materials).

Residuum – an unconsolidated material that has formed from the decomposition of the bedrock without being transported from it's origin.

River Terrace – an ancient flood plain within a river valley that is at a higher elevation than the 1 to 100 year flood plain.

Sand – a near surface deposit of sedimentary material with a composition of the material consisting of 50% or more of particles ranging in size from 0.08 millimetres to 5 millimetres having a depositional history that is not associated with the bedrock formation. (See Figure 1).

Sand Dune – a mound, ridge, or hill of loose sand heaped up by the wind.[9]

Security Deposit – the financial security held by AENV to ensure the reclamation of any surface disturbances related to specified activities.

Silt – a near surface deposit of sedimentary material with a composition of the material consisting of 50% or more of particles ranging in size from 0.002 millimetres to 0.08 millimetres having a depositional history that is not associated with the bedrock formation. (See Figure 1).

Soil – the upper most mineral/organic material, valued as a growing medium. This includes topsoil and subsoil that is to be salvaged.

Subsoil – any material underlying the topsoil that has been penetrated by plant roots. Usually includes the "B" horizon.

Surface materials – for the purpose of this manual includes marl, clay, silt, sand, gravel having a depositional history that is not associated with the bedrock formation.

<table>
<tr><th colspan="4">GRAVEL</th><th colspan="3">SAND</th><th colspan="2">FINES</th></tr>
<tr><td>BOULDERS</td><td>COBBLES</td><td>PEBBLES</td><td>FINE</td><td>COARSE</td><td>MEDIUM</td><td>FINE</td><td>SILT</td><td>CLAY</td></tr>
<tr><td colspan="9">GRAIN 300mm ←→75mm ←→20mm ←→5mm ←→2mm ←→400• m ←→80• m ←→ 2• m SIZE</td></tr>
</table>

Figure 1: Size Classification of Surface Materials

Surface Water – all water associated with the surface of the land.

Texture - soil composition based on grain sizes. See Figure 10 (p. 60).

Testing – using mechanical equipment to determine the quantity and quality of a surface material deposit.

Topsoil – all "A" horizon (Ah, Ahe, Ae, Ap) material within the surface profile including any overlying organic horizons (O, L, F, H).

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[9] Dictionary of Geological Terms – American Geological Institute -1962

Unconsolidated Bedrock – bedrock that has been weathered into material that can be dug up or removed without requiring common bedrock quarrying methods.

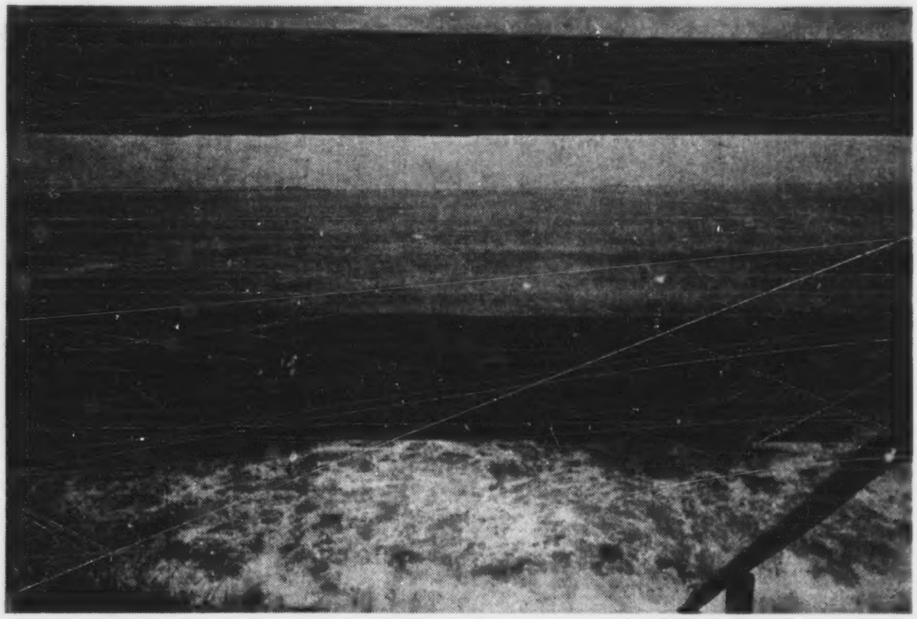
Upland – any tract of land of higher in elevation than the 1 to 100 year flood plain.

Water body – a body of surface water with defined bed and banks, whether or not water is continuously present. Refers to a stream, creek, river, lake or pond of water.

Watercourse – a linear surface feature with defined bed and banks formed from continual to intermittent water flows. Refers to a stream, creek or river.

Abbreviations

AENV – Alberta Environment
AFRD – Agriculture, Food and Rural Development
AI – Alberta Infrastructure
C&R plan – Conservation and Reclamation Plan
CNT – Consultative Notation
EPEA – Environmental Protection and Enhancement Act
LSAS – Land Status Automated System
P. Ag. – professional agrologist
P. Biol. – professional biologist
P.Eng. – professional engineer
P. Geol. – professional geologist
P. Geoph. – professional geophysicist
PLA – Public Lands Act
PPL – Public Pit Licence
PNT – Protective Notation
SMC – Surface Material Licence
SML – Surface Material Lease



A sign in Nova Scotia indicates that the gravel is more valuable than gold, a sign of the times as strategic aggregate sources diminish.

1.2 Legislation

Mines and Minerals Act - defines sand, clay, marl, and gravel as minerals.

The Law of Property Act - defines the ownership of these minerals (sand, clay, marl and gravel) as belonging to the owner of the surface of land if the material can be obtained by stripping off the overburden or excavating from the surface, or otherwise recovered by surface operations.

The Public Lands Act - authorizes and regulates the allocation and use of public land.

> **The Disposition and Fees Regulations** - authorizes extraction of Surface Materials (silt, clay, marl, sand and gravel) on public land. Accomplished through the issuance of Surface Material Licences (includes Public Pit Licences), Surface Material Leases, and Disposition Reservations (government agencies).

The Environment and Enhancement Act - makes pits on public land subject to conservation and reclamation requirements. The Act gives authority to the Minister to delegate reclamation certification duties to Conservation & Reclamation Inspectors. The officers under the Public Lands Act have been designated as Inspectors under EPEA and issue reclamation certificates.

> **Activities Designation Regulations** – excludes surface material extraction operations on public land from the requirement to obtain an approval under EPEA. Approval, for any size of operation on public land, is obtained through the Public Lands Act.
>
> **Conservation and Reclamation Regulation** – allows the specification of reclamation standards. Describes the inquiry process for issuing reclamation certificates. Identifies when and how Environment Orders can be used to ensure compliance with EPEA and the Regulation.

In all cases, when it comes time to certify the reclamation work on the site, the Inspector (land manager) must look to the definitions in the **Conservation and Reclamation Regulation** to determine what kind of activity has been conducted and therefore what the certification requirements are.

Copies of the legislation can be obtained through Queens Printers
11510 Kingsway Avenue
Edmonton, Alberta
T5G 2Y5
Phone: (780) 427-4952
Fax: (780) 452-0668

Main Floor, McDougall Centre
455 - 6th Street, S.W.
Calgary Alberta
T2P 4E8

http://www.gov.ab.ca/qp/index.html

2.0 SURFACE MATERIAL EXTRACTION RIGHTS

As the demand for surface materials increases, access and allocation are becoming more complicated as industry, government and municipal users compete to develop the diminishing resource which in many cases, appear to conflict with other resource values. Locating and protecting potential sources, allocating those resources appropriately, monitoring surface material extraction operations and promoting good resource management, are functions that have far reaching economical benefits for Alberta.

The land management function of the Land and Forest Service of Alberta Environment and the Public Lands Division of Agriculture, Food and Rural Development includes being the resource managers for surface materials. The surface material potential and value will be incorporated into all the other resource values (water, wildlife, fish, historical) when land use and conservation decisions are being formulated by the land manager.

Surface rights obtained through public land agreements do not convey the rights to the surface material resources unless it is specifically stated in the agreement.

Obtaining the right to the surface materials on public land is accomplished through the approvals noted in Section 2.2.

The approval does not convey any rights to any mineral under the Mines and Mineral Act or historical resource that may be contained within a surface material deposit.

2.1.1 Cancelled Surface Materials Dispositions with Resource Potential

From time to time, surface material dispositions on public land are terminated. Regional resource needs determine the reallocation parameters of these resources.

If AENV believes that a shortage may occur in the future, or the gravel exceeds public needs at present, it may place a reservation on some or all of the deposit for the future. Also, if AENV believes that the aggregate deposit should be developed, the source may be tendered as a single parcel of land, or divided and tendered as a number of parcels.

2.1.2 New Sources of Surface Material Resources

Applications for a surface material extraction site usually follow an exploration program to locate new sources of surface material. All applications are taken on a "first-come, first-served" basis. Only one application at a time is considered for surface material operations on a specific site. When an application is reviewed, the following two provisions must be considered.

First, public projects must take priority. Therefore, if a government department has already determined that a specific need exists in a particular area, through a Consultative or Protective Notation identifying the area of interest, that need will be filled first.

Second, AENV requires information, reports and monies to be sent to the department within a specified time, along with a justification for the use of **all** surface materials on that land. Based on the applicant's test results, the area of land requested may be reduced based on the amount of material found in combination with the projected needs.

2.1.3 Alberta Infrastructure and Municipalities

Since Alberta Infrastructure (AI) or local municipalities carry out public projects to meet provincial needs, their Reservations are given priority for surface material approvals. It should be noted that AI often maintains pits strictly for its use in constructing and maintaining the public highway system. These pits are not open to supply aggregate to projects other than public works projects.

If necessary, legislation allows AI to enter any public land held under a surface material lease to obtain material for a public project. In such cases, compensation is generally considered for the leaseholder. Situations such as this are not common.

2.2 Determining the Best Approach for Surface Material Removal from Public Lands

2.2.1 Licence or Lease

a) **Public Pit Licences** (PPL) are issued for extraction from government held extraction sites. These sites are held by AENV/AFRD/AI, under Disposition Reservations (DRS), in situations where limited sources are available either through the lack of sources or environmental impact control is being implemented as a land management strategy. These pits allow all operators access the surface material resources with instant approval once a Public Pit Licence application has been completed at the regional or Edmonton office. (See 2.4.1)

b) **Surface Material Licences** (SMC) are designed for quick approval of small volume requirements in remote areas were the surface material source will likely not have an ongoing demand. (See 2.4.3)

c) **Surface Material Leases** (SML) are designed for long term tenure promoting orderly resource development and management through detailed assessment and planning. Leases are issued based on the geological information substantiating the extent and quantity of the surface material resources as well as evaluating the activity of extraction as an appropriate land use. (See 2.4.4)

2.2.2 Availability of Land for Licence or Lease

An application for an SMC or SML can be made for any public land, however some areas may not be available for surface material extraction operations because of conflicting interests or conservation concerns. Obtaining a list of the interests associated with and surrounding the lands of surface material potential can give some indication of land availability or operational restrictions. Reports of activities (interests) are available through the Land Status Automated System (LSAS). Copies of land standings are available for a fee from Crown Searches in Calgary at (403) 297-6324

2.2.3 Confirmation of Surface Material

Minerals that require approval under the Mines and Minerals Act can be mistaken for surface materials. This can occur when unconsolidated or weathered bedrock is situated near the surface (river valleys, foothill/mountain terrain). Surface material deposits have a depositional history that is not associated with the bedrock formation. If there is doubt as to the origin of the deposit, a geologist can be employed to establish the depositional history, or a Metallic and Industrial Minerals agreement can be obtained from Resource Development to reduce the risk of potential conflict with an "industrial mineral" rights holder.

2.2.4 Disposition Boundary Configuration

The boundaries of a Surface Material Lease can be set once the surface material resources location is determined through the exploration program. The boundaries can then be configured to match the area underlain by the surface materials along with all the required working space to allow maximum extraction of available resources and subsequent reclamation. Holding the surface material resources under the approval protects the resource from other land uses that could hinder extraction activities. **Any land applied for under a Surface Material Lease must have sufficient information to qualify the extent and quantity of surface materials.**

Once the lease boundaries are established and the application for the land is referred, approval of the application may be conditional to maintaining undisturbed buffers within the area applied for. The widths of the buffers are based on government guidelines. These buffers may be reduced if a qualified professional is employed to assess the objectives of the buffers in relationship to the site and signs a plan that specifies and justifies the reduced buffers.

2.2.5 Accessibility of the Land

The access to the land containing the surface material resource is an important consideration as the environmental impact of the road can be as significant as the extraction operation.

2.2.6 Conforming to Area Management Plans

For many areas of Alberta, Integrated Resource Plans (IRPs), Integrated Resource Management (IRM) plans, Integrated Management Plans, Lake, River or other operational Management Plans and Municipal Land-Use Bylaws/Orders are developed by the various agencies involved. If the applicant's activity is not in keeping with the use intended by these plans, an application may not be approved. Many of the IRPs and IRMs are available through AENV's Library (6th Floor, 9920 - 108 Street, Edmonton, Alberta T5K 2M4, Phone: (780) 427-5870. IRMs will become available on AENV's website as they are developed.

2.2.7 Approvals/Codes of Practice of Other Agencies and Municipal Authorities

Legislation has given different authorization powers to various other agencies. An approval obtained under the Public Lands Act will not guarantee the right to operate. It is up to the operator to determine and obtain the necessary approvals and abide by all applicable Codes of Practice. These may include approvals or codes of practice under the Water Act, the Federal Fisheries Act, Municipal Government Act, etc. An application submitted to AENV/AFRD will be referred to any government agency with a registered interest including the municipal authority.

Municipalities and counties have varying requirements for development permits. The applicant is to check with the appropriate municipal office to obtain the applicable requirements to comply with zoning and land use bylaws.

2.3 Application Procedures

2.3.1 Applicant Criteria

Applicants must be eighteen (18) years of age or older. If an application is being made on behalf of a company, the company's name must be legally registered with Alberta Consumer and Corporate Affairs. **The exact registered name must be used on any application.** The registration and exact name can be confirmed by calling Alberta Registries in Edmonton at 427-2311.

2.3.2 Obtaining Forms and Submission of an Application

The appropriate application forms are available through all AENV/AFRD district offices as well as the Edmonton office. For a directory of the offices refer to your telephone book, the Rite telephone directory (780) 427-3169/(403) 297-7166 or visit the Internet addresses @ http://www.agric.gov.ab.ca/navigation/sustain/publiclands/index.html (AFRD) or http://www.gov.ab.ca/env/info/infocentre/contacts.html (AENV). Enquiries can be made or an application can be submitted to any departmental office in the province. For purposes of administration, AENV has divided Alberta into two main areas, the White and the Green. AFRD (Public Lands Division) manages the White Area, while AENV (Land and Forest Services) manages public land in the Green Area. Any application submitted to a departmental office is forwarded to Edmonton for processing. Direct contact in person, by mail or fax can also be made with the Edmonton office. (Refer to your telephone book for the locations and phone numbers of offices in Alberta).

2.3.3 Content Requirements for Disposition Plans

Refer to the departmental plan standards of the Technical Services Branch, Land Administration Division, Land and Forest Service, AENV.

2.3.4 Processing of the Application

Once the completed application form, plan and relative fees (see pocket) are received by AENV, Edmonton departmental staff will review the application to ensure it meets all requirements. Applications meeting all the requirements are referred to all appropriate agencies including the land manager. Government agencies having an interest will be given an opportunity to comment on the proposed use of the land. The land manager will decide if the proposed development is congruent with regional land management objectives also taking into account the input of the other agencies. The application is approved with operating conditions or rejected. Edmonton departmental staff will send a letter of approval to the applicant with a lease agreement for signing along with the operating conditions, or if more information is required, or a letter stating why the proposal cannot be considered. Provided there are no objections, the applicant will receive approval within four to six weeks.

2.3.5 Information Required by AENV

All surface material extraction operations require subsurface information to justify the land holding rights. This data is obtained through a Surface Material Exploration approval or other valid geological assessments. The subsurface data is to be submitted with the application for an SML or SMC. It is the exploration approval that allows subsurface assessment for the application for surface material extraction operation.

2.3.6 Appeals

Surface material operations are permitted only when the environment is adequately protected and fits with the Provincial or regional land management objectives. If an application for a surface material operation is refused, the agency refusing the application must place a protective notation on the site within 30 days. This notation will indicate that the site is unsuitable for any future gravel removal.

An applicant may appeal AENV's decision (Internal Referral Process) to reject the application, provided it can be shown that the environmental damage can be minimized.

2.3.7 Approval

Once the conservation and reclamation plans are approved and all additional fees have been collected, an approval letter will be sent to the operator authorizing extraction.

2.4 Approvals for Obtaining the Right to the Surface Materials

The following chart outlines the various approvals for obtaining the right to the surface materials on public land.

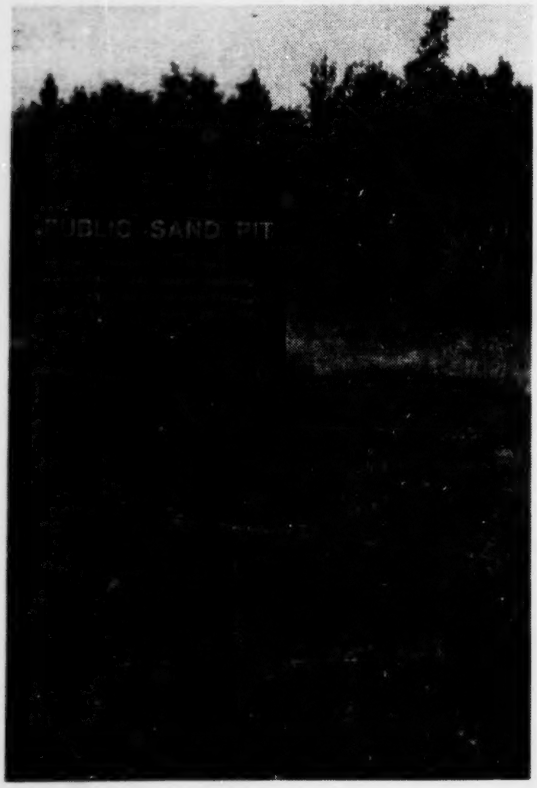
Approval Chart

Authorization	Material Type	Size Parameters	Term	Location	Consents	Requirements	Comments
Public Pit Licence (PPL) Dispositions and Fees Regulation – Public Lands Act (PLA)	Clay, silt, sand, gravel, marl	Maximum volume set by pit limit (higher volumes are available with the justification of need)	12 months or the approved volume has been removed	From a designated Reservation held by a Government agency	None	- The application for a PPL can be done at any local Public Lands Division or Land and Forest office. - Application, reclamation, management fees and royalties are paid at application stage.	The licencee must remove material as directed by the licence conditions or the pit manager.
Surface Material Exploration (SME) Section 19 – PLA	sand, gravel, marl, peat	- Unlimited (non exclusive rights) - Up to 640 ac. (exclusive rights)	3 months	Any location on land not under a Surface material disposition.	Requires proponent to obtain consent from all interest holders prior to entry.	- A Plan showing the proposed area covered, access trails to be used or constructed, timing, location of other dispositions. - A Final Plan showing the actual test pit locations and total disturbance that occurred.	- Regular referral process. - Letter of Closure issued upon the confirmation of reclamation. - The Final Plan is to be submitted with letter of closure.
Surface Material Licence (SMC) Dispositions and Fees Regulation – Public Lands Act (PLA)	Clay, silt	- Maximum area 12.35 ac. (5 ha)	12 months or the approved volume has been removed	For extraction proposals not meeting the parameters of a Temporary Field Approval (TFA) for borrow pits.	Requires written consent from any disposition holder, submitted to Land Administration Division (LAD), prior to approval.	- Operating plan, payment of royalties, timber assessment & security deposit. - A Final Plan outlining the total area that was disturbed along with the reclamation accomplished. - The Final Plan is to be submitted with the Reclamation Certification Request.	- Regular referral process. - Reclamation certification required under EPEA.
	sand, gravel, marl	- Maximum area 5 ac. (2 ha.) - Max. volume 10,000 cu. yd.	12 months or the approved volume has been removed or 3 months for Alberta Infrastructure's DRSs.	Any location			
Surface Material Lease (SML) Disposition Reservation (DRS - issued to govt. agencies)	clay, silt, sand, gravel, marl	- Maximum area 40 ac. (16.2 ha) (larger area may be considered with justification)	10 year with renewal option or as directed by the land manager	Any location	Requires written consent from any disposition holder, submitted to LAD, prior to entry.	- Under 5 acres requires an "Operating Plan" - 5 acres and over requires a "Conservation and Reclamation Plan"	- Regular referral process - Reclamation certification required under EPEA. - Authorized by Dispositions and Fees Regulation – Public Lands Act (PLA)

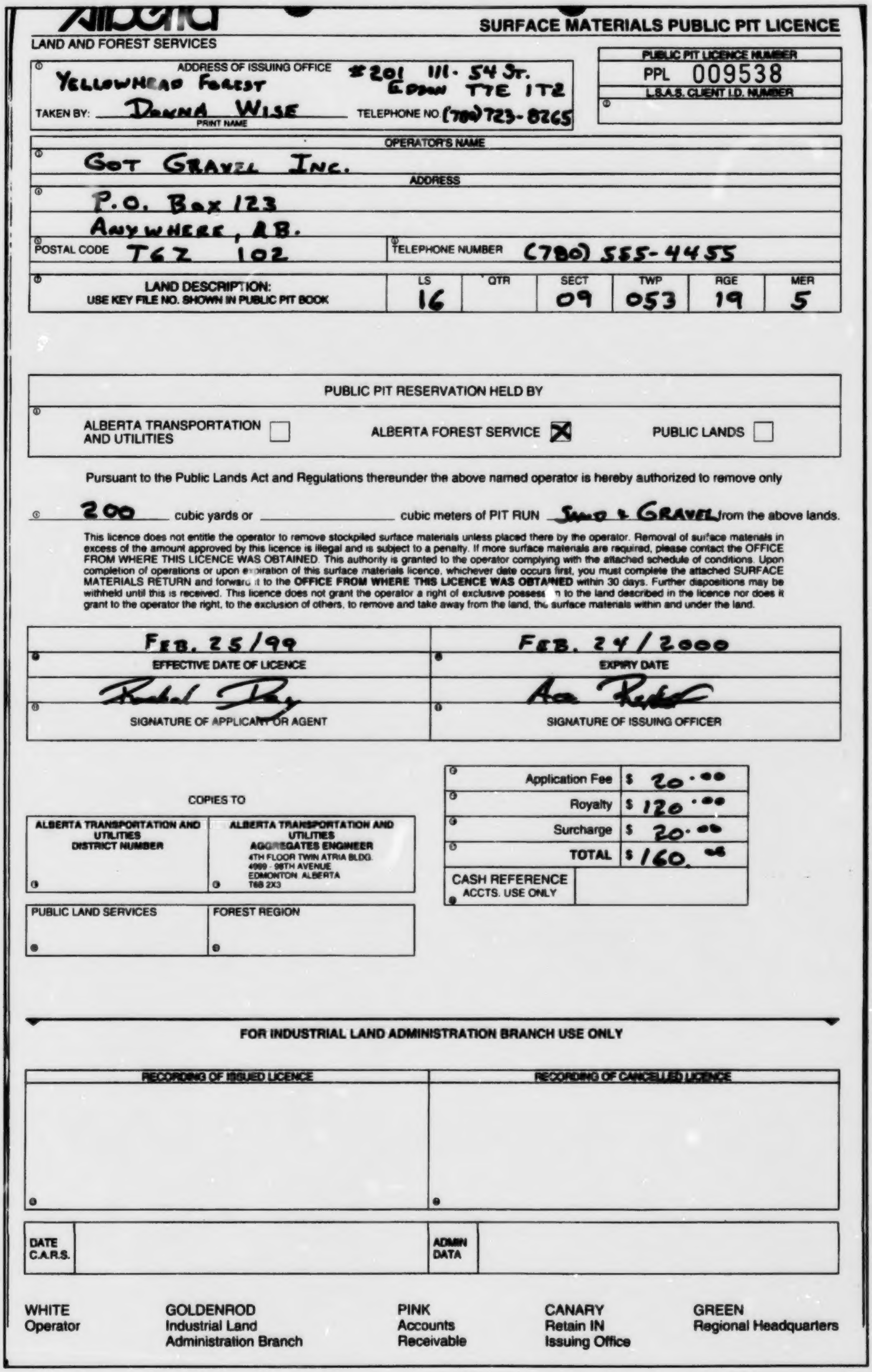
Authorization	Material Type	Size Parameters	Term	Location	Consents	Requirements	Comments
Consultative & Protective Notation Reservations (CNT & PNT) (issued to govt. agencies) Dispositions and Fees Regulation – Public Lands Act (PLA)	clay, silt, sand, gravel, marl	Unlimited	Unlimited	Any location	Not required	CNT – a plan outlining the lands covered. PNT – a plan outlining the lands covered along with all test information that verifies the presence of surface materials.	- Held by another government agency to identify an interest in a potential surface material source or - Placed by the land manager to identify an area having a potential surface material source. - Acts as a flag for as a surface material potential area when other land use/conservation decisions are being considered.
Temporary Field Authority (TFA) Section 19 – PLA	clay, silt used as fill material	As directed by the land manager	12 months or as directed by the land manager	- adjoining (LOC) or adjacent (MSL) an associated disposition - (adjacent means no greater than 100 m from the associated disposition boundary)	Requires written consent from any disposition holder, submitted to the Land Manager, prior to entry.	Location plan indicating pit dimensions is to be submitted to the Land manager in conjunction with the completed "as built" drawing for the adjacent/adjoining disposition.	- Used when no other resource concerns (critical wildlife area, Water Act authorization required) exist. - Must meet material type, location, time and size parameters and only used as fill in the adjoining/adjacent disposition. - Used in situations where no royalty is to be collected. - Reclamation certification required under Environment and Enhancement Act (EPEA) and issued in conjunction with associated disposition.

2.4.1 Public Pits

- Public pits are established by AENV/AFRD when there is either a limited source of material (i.e., only one viable source for all users in an area) or limited demand (i.e., there is a need for a public source to accommodate small volume demands).
- A Public Pit List, giving the locations of the pits, can be viewed at your local AENV/AFRD District Office or obtained through LSAS searches.
- Public Pit Licences (PPL) are issued to individuals or companies for up to one year.
- The volume to be removed is specified in the licence and all fees are paid in advance (see Section 6.0 for fees).
- These licences are issued immediately (there is no referral period).
- A licence can be obtained at any field office or through the Edmonton office.
- The maximum volume of material that can be extracted is usually limited (200 cu. yds.).
- A surcharge is collected to cover the cost of reclamation.
- Amounts larger than the licence's maximum limit can be approved by the issuing office with a written request validating the need (specify material use and project location). This written request is sent to Land Administration Office, Edmonton along with a copy of the licence, by the issuing office.



Form - Application for Surface Materials Public Pit Licence



LAND AND FOREST SERVICES

SURFACE MATERIALS PUBLIC PIT LICENCE

ADDRESS OF ISSUING OFFICE: YELLOWHEAD FOREST #201 111 - 54 ST. EDMN T7E 1T2

TAKEN BY: DONNA WISE (PRINT NAME) TELEPHONE NO. (780) 723-8265

PUBLIC PIT LICENCE NUMBER: PPL 009538

L.S.A.S. CLIENT I.D. NUMBER:

OPERATOR'S NAME: GOT GRAVEL INC.

ADDRESS:
P.O. BOX 123
ANYWHERE, AB.

POSTAL CODE: T6Z 1O2

TELEPHONE NUMBER: (780) 555-4455

LAND DESCRIPTION: USE KEY FILE NO. SHOWN IN PUBLIC PIT BOOK	LS	QTR	SECT	TWP	RGE	MER
	16		09	053	19	5

PUBLIC PIT RESERVATION HELD BY

ALBERTA TRANSPORTATION AND UTILITIES ☐ ALBERTA FOREST SERVICE ☒ PUBLIC LANDS ☐

Pursuant to the Public Lands Act and Regulations thereunder the above named operator is hereby authorized to remove only 200 cubic yards or ________ cubic meters of PIT RUN SAND & GRAVEL from the above lands.

This licence does not entitle the operator to remove stockpiled surface materials unless placed there by the operator. Removal of surface materials in excess of the amount approved by this licence is illegal and is subject to a penalty. If more surface materials are required, please contact the OFFICE FROM WHERE THIS LICENCE WAS OBTAINED. This authority is granted to the operator complying with the attached schedule of conditions. Upon completion of operations or upon expiration of this surface materials licence, whichever date occurs first, you must complete the attached SURFACE MATERIALS RETURN and forward it to the **OFFICE FROM WHERE THIS LICENCE WAS OBTAINED** within 30 days. Further dispositions may be withheld until this is received. This licence does not grant the operator a right of exclusive possession to the land described in the licence nor does it grant to the operator the right, to the exclusion of others, to remove and take away from the land, the surface materials within and under the land.

FEB. 25/99	FEB. 24/2000
EFFECTIVE DATE OF LICENCE	EXPIRY DATE
SIGNATURE OF APPLICANT OR AGENT	SIGNATURE OF ISSUING OFFICER

Application Fee	$ 20.00
Royalty	$ 120.00
Surcharge	$ 20.00
TOTAL	$ 160.00
CASH REFERENCE ACCTS. USE ONLY	

COPIES TO

ALBERTA TRANSPORTATION AND UTILITIES DISTRICT NUMBER	ALBERTA TRANSPORTATION AND UTILITIES AGGREGATES ENGINEER 4TH FLOOR TWIN ATRIA BLDG. 4999 - 98TH AVENUE EDMONTON ALBERTA T6B 2X3
PUBLIC LAND SERVICES	FOREST REGION

FOR INDUSTRIAL LAND ADMINISTRATION BRANCH USE ONLY

RECORDING OF ISSUED LICENCE	RECORDING OF CANCELLED LICENCE

DATE C.A.R.S.		ADMIN DATA	

WHITE	GOLDENROD	PINK	CANARY	GREEN
Operator	Industrial Land Administration Branch	Accounts Receivable	Retain IN Issuing Office	Regional Headquarters

Operating in a Public Pit

Once a Public Pit Licence has been issued, the operator has until the expiry date, usually one year from the "Effective Date of Licence", to remove the material applied for.

In non-onsite management pits the operator is responsible to operate in the area dictated by the holder of the Public Pit. The clearing of vegetation, stripping of topsoil and overburden is to be carried out by the operator as directed by the holder of the Public Pit. Your extraction operation must be co-ordinated with any other operator who may be working the pit at the same time.

All extraction faces created by the operator are to be resloped to a 2 to 1 slope ratio once the operation has been completed. The 2:1 grade is to be accomplished by sloping the exposed surface material only (no replacement of overburden).

Within 30 days of the removal of the material or the "Expiry Date", which ever comes first, the operator is to submit an "Surface Material Return". The amount and type of material removed is to be reported. Surface material amounts are to be reported by truck box volume capacities, loader bucket capacity or scaled weight. If larger amounts are required as specified in the licence, the operator is to contact the same office as the issuance of the licence and obtain a new PPL.

The amount removed over the amount specified by the licence is illegal and subject to a penalty fee.

2.4.2 Surface Material Exploration (SME)

- This approval authorizes the use of mechanized equipment for line clearing, test pit digging or a drilling program. Hand augers or other methods that create a minimal amount of disturbance do not require approval, however the land remains open to any application that could prevent the review of a later application submission. If the approval is 640 acres or less the holder has exclusive rights to any surface material applied for and found within the lands listed in the approval.
- Exploration licences are issued to individuals or companies for up to 90 days.
- The applications are referred to the land managers and other resource agencies for approval recommendations.
- An exploration program is to be carried out to determine the land area required which will provide the required volumes of surface materials.

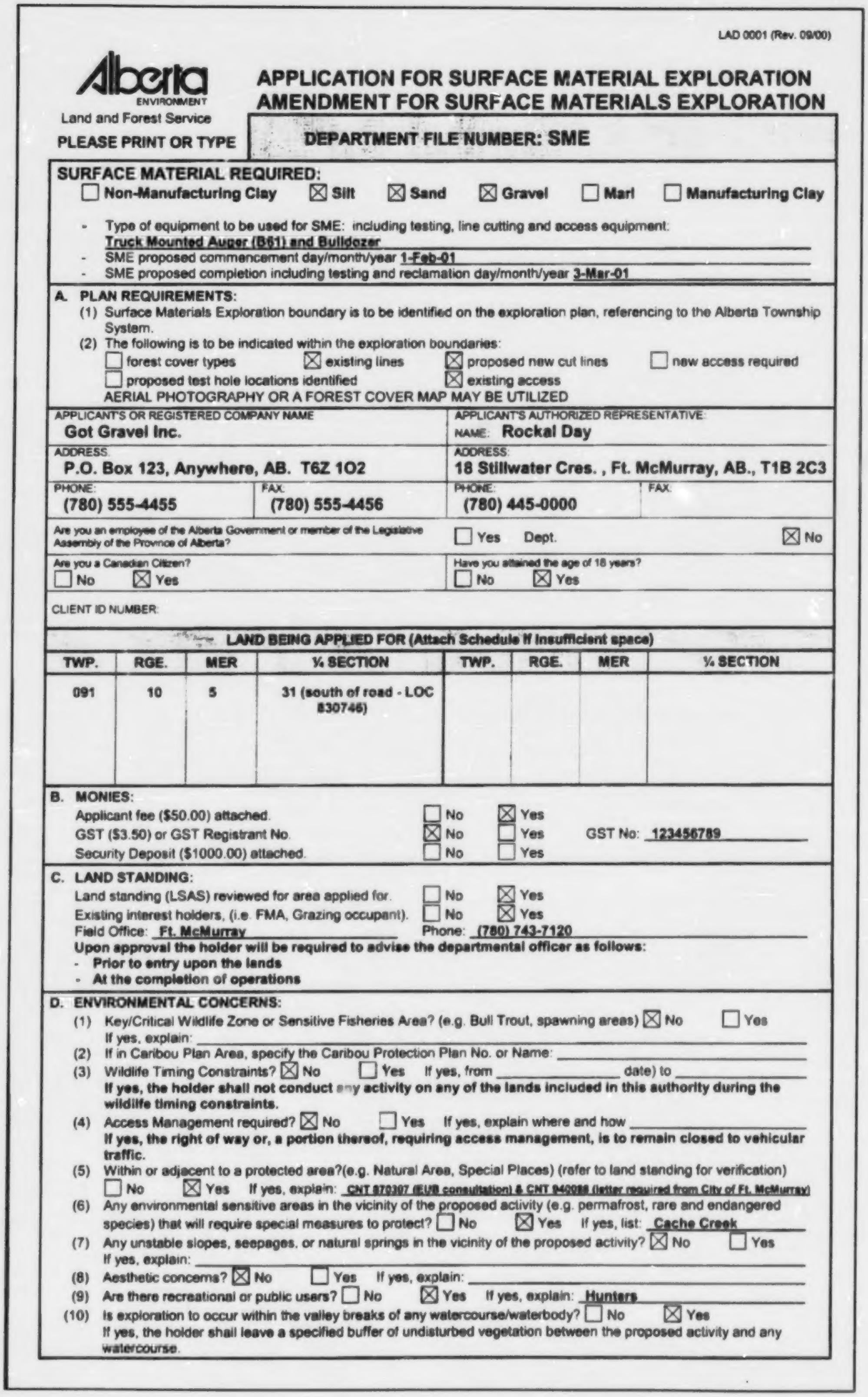
2.4.2.1 Situations Requiring Exploration Approval

Exploration is usually required to find, then establish the extent and volume reserves of a surface material deposit for determining the lease boundary configuration. Adjoining extraction operations or existing geological data may provide sufficient information to estimate the deposit's extent and volume under the area of application. The anticipated marketable volumes held under a lease must be justified by the Conservation and Reclamation Plan.

Approval from AENV is required when exploration activities will create a surface disturbance. Normally, this occurs when motorized equipment is used to dig or drill exploration holes. The clearing of vegetation to open access routes or to create exploration lines is also defined as a surface disturbance.

An exploration approval is not required if the use of hand tools or any other prospecting activity is undertaken that does not cause a surface disturbance. However, the operator should obtain the necessary consent from any leaseholder whom has surface rights to the land being explored. Any non-disturbance exploration carried out without an exploration approval will not protect the rights to any surface materials located by the exploration program.

Form – Application & Amendment for Surface Material Exploration (Page 1)



LAD 0001 (Rev. 09/00)

Alberta
ENVIRONMENT
Land and Forest Service

PLEASE PRINT OR TYPE

APPLICATION FOR SURFACE MATERIAL EXPLORATION
AMENDMENT FOR SURFACE MATERIALS EXPLORATION

DEPARTMENT FILE NUMBER: SME

SURFACE MATERIAL REQUIRED:

☐ **Non-Manufacturing Clay** ☒ **Silt** ☒ **Sand** ☒ **Gravel** ☐ **Marl** ☐ **Manufacturing Clay**

- Type of equipment to be used for SME: including testing, line cutting and access equipment: **Truck Mounted Auger (B61) and Bulldozer**
- SME proposed commencement day/month/year **1-Feb-01**
- SME proposed completion including testing and reclamation day/month/year **3-Mar-01**

A. PLAN REQUIREMENTS:

(1) Surface Materials Exploration boundary is to be identified on the exploration plan, referencing to the Alberta Township System.

(2) The following is to be indicated within the exploration boundaries:

☐ forest cover types ☒ existing lines ☒ proposed new cut lines ☐ new access required

☐ proposed test hole locations identified ☒ existing access

AERIAL PHOTOGRAPHY OR A FOREST COVER MAP MAY BE UTILIZED

APPLICANT'S OR REGISTERED COMPANY NAME **Got Gravel Inc.**		APPLICANT'S AUTHORIZED REPRESENTATIVE: NAME: **Rockal Day**	
ADDRESS: **P.O. Box 123, Anywhere, AB. T6Z 1O2**		ADDRESS: **18 Stillwater Cres. , Ft. McMurray, AB., T1B 2C3**	
PHONE: **(780) 555-4455**	FAX: **(780) 555-4456**	PHONE: **(780) 445-0000**	FAX:
Are you an employee of the Alberta Government or member of the Legislative Assembly of the Province of Alberta?		☐ Yes Dept.	☒ No
Are you a Canadian Citizen? ☐ No ☒ Yes		Have you attained the age of 18 years? ☐ No ☒ Yes	
CLIENT ID NUMBER:			

LAND BEING APPLIED FOR (Attach Schedule If Insufficient space)

TWP.	RGE.	MER	¼ SECTION	TWP.	RGE.	MER	¼ SECTION
091	10	5	31 (south of road - LOC 830746)				

B. MONIES:

Applicant fee ($50.00) attached. ☐ No ☒ Yes

GST ($3.50) or GST Registrant No. ☒ No ☐ Yes GST No: **123456789**

Security Deposit ($1000.00) attached. ☐ No ☐ Yes

C. LAND STANDING:

Land standing (LSAS) reviewed for area applied for. ☐ No ☒ Yes

Existing interest holders, (i.e. FMA, Grazing occupant). ☐ No ☒ Yes

Field Office: **Ft. McMurray** Phone: **(780) 743-7120**

Upon approval the holder will be required to advise the departmental officer as follows:

- **Prior to entry upon the lands**
- **At the completion of operations**

D. ENVIRONMENTAL CONCERNS:

(1) Key/Critical Wildlife Zone or Sensitive Fisheries Area? (e.g. Bull Trout, spawning areas) ☒ No ☐ Yes
If yes, explain: ____

(2) If in Caribou Plan Area, specify the Caribou Protection Plan No. or Name: ____

(3) Wildlife Timing Constraints? ☒ No ☐ Yes If yes, from ____ date) to ____
If yes, the holder shall not conduct any activity on any of the lands included in this authority during the wildlife timing constraints.

(4) Access Management required? ☒ No ☐ Yes If yes, explain where and how ____
If yes, the right of way or, a portion thereof, requiring access management, is to remain closed to vehicular traffic.

(5) Within or adjacent to a protected area?(e.g. Natural Area, Special Places) (refer to land standing for verification)
☐ No ☒ Yes If yes, explain: **CNT 870307 (EUB consultation) & CNT 940088 (letter required from City of Ft. McMurray)**

(6) Any environmental sensitive areas in the vicinity of the proposed activity (e.g. permafrost, rare and endangered species) that will require special measures to protect? ☐ No ☒ Yes If yes, list: **Cache Creek**

(7) Any unstable slopes, seepages, or natural springs in the vicinity of the proposed activity? ☒ No ☐ Yes
If yes, explain: ____

(8) Aesthetic concerns? ☒ No ☐ Yes If yes, explain: ____

(9) Are there recreational or public users? ☐ No ☒ Yes If yes, explain: **Hunters**

(10) Is exploration to occur within the valley breaks of any watercourse/waterbody? ☐ No ☒ Yes
If yes, the holder shall leave a specified buffer of undisturbed vegetation between the proposed activity and any watercourse.

Form – Application & Amendment for Surface Material Exploration (Page 2)

LAD 0001 (Rev. 09/00)

E. ACCESS OR TESTING PROCEDURE:

- Testing is to occur along existing lines only. ☒ No ☐ Yes If no, complete Sections E & F
- If no, all new lines to be constructed are to be shown on an attached map along with spacing and access routes.
- Right of Way widths for new cut lines are 4 metres.
- Length of new cut lines is 105 metres.
- Describe disposal of woody debris: roll back

Activity on the land during adverse ground conditions must be suspended if the activity is likely to cause unacceptable damage to vegetation and soil.

TESTING REQUIREMENTS:

- The holder shall provide the department with a detailed report of every log or survey taken on each hole within 60 days of completion of program.
- If the proponent wishes to pursue a surface materials lease on a specific location within the exploration area, further testing may be required to determine the quality and confirm the quantity of materials.
- All excavated test holes are to be back filled (horizons replaced in order found if backhoe used) compacted and capped. The topsoil/ surface soil layer is to be salvaged and replaced on the surface of the back filled excavation.

F. TIMBER SALVAGE

Timber salvage is a basic operating requirement for all industrial and commercial uses of public lands.

(1) Merchantable timber present? ☐ No ☒ Yes If yes, provide the information on specification and estimated volumes/loads. One load
(2) Avoidance cutting techniques are to be used yes , if yes, indicate locations on attached map
(3) Timber salvage waiver requested? ☒ No ☐ Yes If yes, explain
(4) If known, indicate the name of the salvage purchaser: Alpac
(5) Timber is considered merchantable and salvageable if it is within 0.8 km of any all-weather road or good winter access road or within 0.8 km of proposed or active logging. At a minimum there should be one truckload (approximately 80 trees) of salvage wood.

G. EVALUATION OF IMPACTS ON WATERCOURSES/WATER BODIES

The Exploration Program includes watercourse/water body crossings. ☐ No ☒ Yes If Yes, section "G" must be completed

For exploration and access roads which cross a watercourse or water body, the *Water Act Code of Practice for Watercourse Crossings* must be followed, except in those situations where a watercourse crossing is identified as being exempt from requiring an approval under Schedules 1 & 2 of the *Water Act Ministerial Regulation*.

The applicable Code of Practice Management Area Map is to be consulted to determine the crossing "types" that would be applicable to any activity potentially impacting water bodies. The code and maps outline where certain types of crossings may be used and identify certain locations where new crossings are not permitted.
The code and maps are available through Queen's Printer or at website www.gov.ab.ca/env/water/legislation/index.html.

It is expected that the proposed watercourse crossings have been evaluated and positioned to minimize environmental impact and meet the applicable Code of Practice requirements.

Each water crossing, where mechanical equipment will cross, must be identified on the map. Each location must be given a number and, the proposed crossing method identified with the appropriate symbol, as shown below (enclosed in a circle). Examples Ⓢ SF

☐ Snow (SF) and/ or ice fills (IF)
☐ Strapped or cabled log fills (LF)
☐ Ford type crossings (F)
☐ Log Fill (LgF)
☐ Portable free span bridge (PB)
☐ Existing bridge (B)
☐ Culvert (C)
☐ Other (specify):

The holder shall not deposit or push debris, soil or other deleterious materials into or through any watercourse or water body or on the ice of any watercourse/body.

The capacity of any culvert and bridges in a watercourse crossing must ensure that any increase in back flooding does not result in flood damage to public land or property.

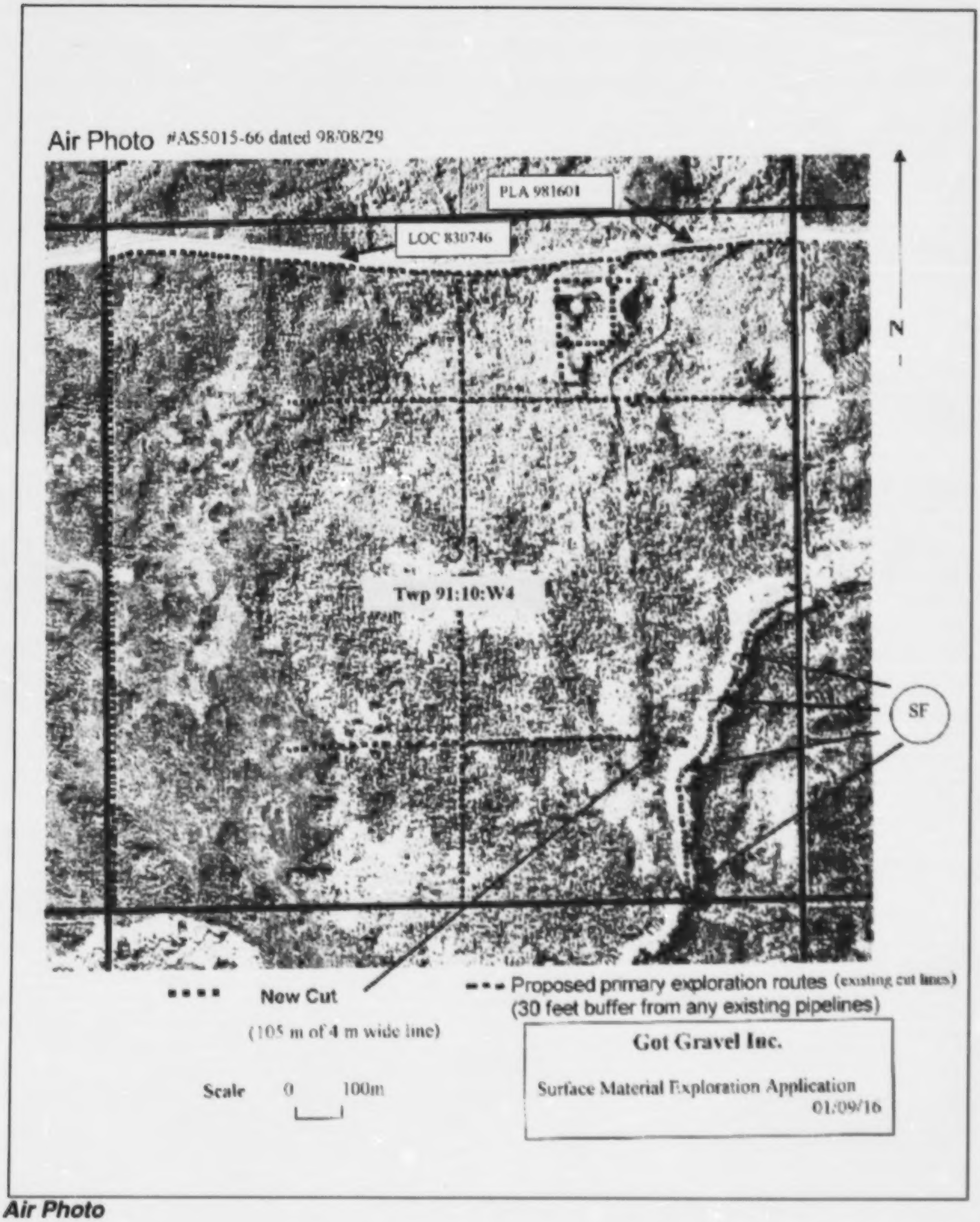
H. RECLAMATION

- Progressive reclamation work is to be carried out concurrently with exploration.
- Reclamation includes debris disposal, slope stabilization, recontouring, restoration of natural drainage(s), replacement of surface soil and revegetation.
- Woody debris, including leaning trees, must be disposed of in accordance with the Forest & Prairie Protection Regulations, Part II, unless otherwise directed by a departmental officer.
- Seed mixture must be determined in consultation with the departmental officer. The holder shall provide, upon request of a departmental officer, a certificate of analysis for each seed lot used in the reclamation of these lands.
- A Letter of Closure is required to Release the Holder of the Exploration Approval of any further reclamation responsibilities

DATE: November 10, 2000

SIGNATURE OF APPLICANT OR REPRESENTATIVE

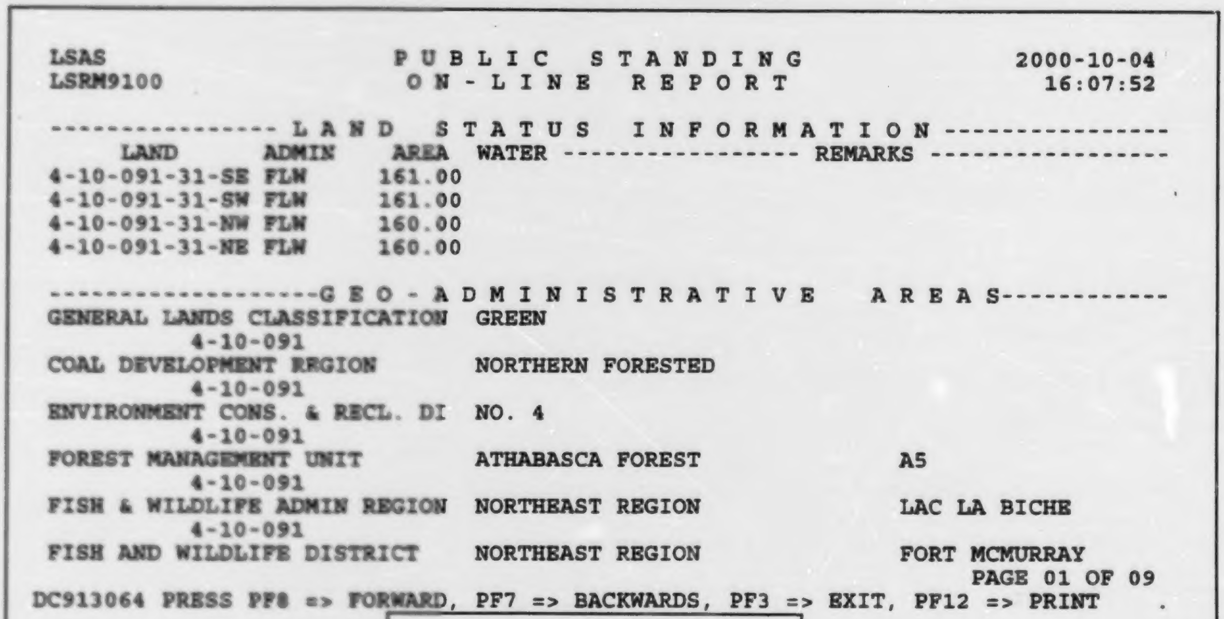
The information requested on this form will be used to authorize use of public land. This information is requested in accordance with the Public Lands Act and is protected by the provisions of the Freedom of Information and Protection of Privacy Act. For further information, contact the Land Administration Division at (780) 427-3570.


Air Photo #AS5015-66 dated 98/08/29
PLA 981601
LOC 830746
N
Twp 91:10:W4
SF
New Cut
(105 m of 4 m wide line)
Proposed primary exploration routes (existing cut lines)
(30 feet buffer from any existing pipelines)
Scale 0 100m
Got Gravel Inc.
Surface Material Exploration Application
01/09/16

Air Photo

LSAS Reports (Lands applied for and adjacent lands- page 1 of each report)

Report of lands applied for



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LSAS                       P U B L I C   S T A N D I N G                 2000-10-04
LSRM9100                    O N - L I N E   R E P O R T                   16:07:52

----------------- L A N D   S T A T U S   I N F O R M A T I O N -----------------
     LAND         ADMIN     AREA  WATER ----------------- REMARKS -----------------
4-10-091-31-SE FLW      161.00
4-10-091-31-SW FLW      161.00
4-10-091-31-NW FLW      160.00
4-10-091-31-NE FLW      160.00

-------------------G E O - A D M I N I S T R A T I V E   A R E A S-----------
GENERAL LANDS CLASSIFICATION  GREEN
          4-10-091
COAL DEVELOPMENT RRGION       NORTHERN FORESTED
          4-10-091
ENVIRONMENT CONS. & RECL. DI  NO. 4
          4-10-091
FOREST MANAGEMENT UNIT        ATHABASCA FOREST               A5
          4-10-091
FISH & WILDLIFE ADMIN REGION  NORTHEAST REGION               LAC LA BICHE
          4-10-091
FISH AND WILDLIFE DISTRICT    NORTHEAST REGION               FORT MCMURRAY
                                                                  PAGE 01 OF 09
DC913064 PRESS PF8 => FORWARD, PF7 => BACKWARDS, PF3 => EXIT, PF12 => PRINT    .
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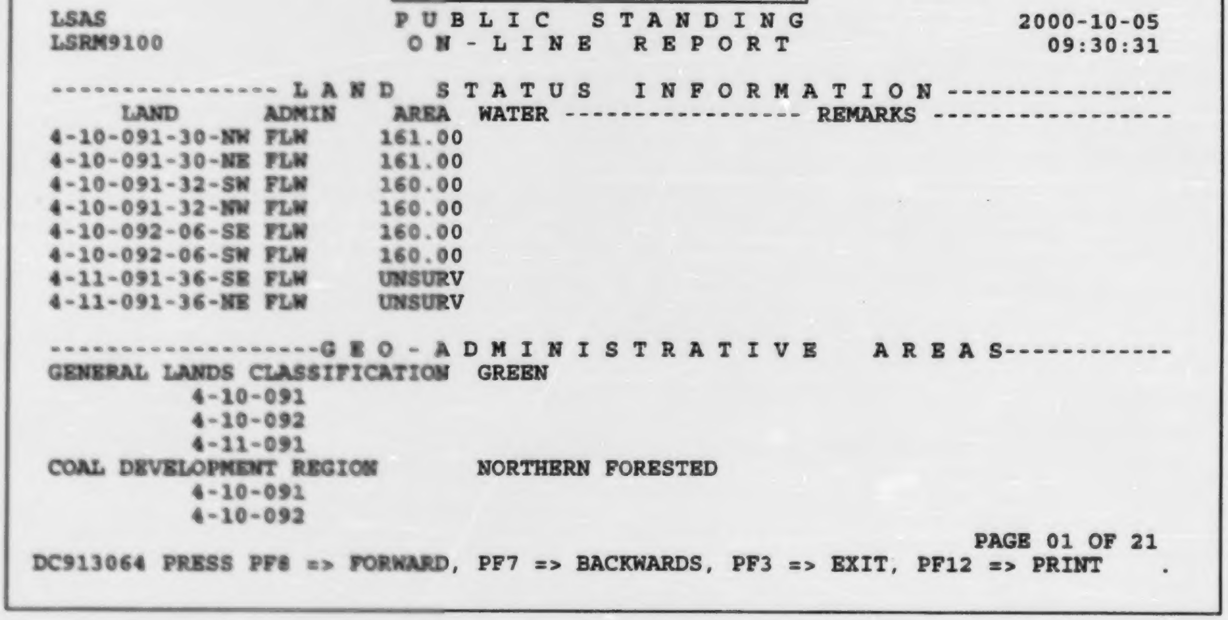
Report for adjacent lands



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LSAS                       P U B L I C   S T A N D I N G                 2000-10-05
LSRM9100                    O N - L I N E   R E P O R T                   09:30:31

----------------- L A N D   S T A T U S   I N F O R M A T I O N -----------------
     LAND         ADMIN     AREA  WATER ----------------- REMARKS -----------------
4-10-091-30-NW FLW      161.00
4-10-091-30-NE FLW      161.00
4-10-091-32-SW FLW      160.00
4-10-091-32-NW FLW      160.00
4-10-092-06-SE FLW      160.00
4-10-092-06-SW FLW      160.00
4-11-091-36-SE FLW      UNSURV
4-11-091-36-NE FLW      UNSURV

-------------------G E O - A D M I N I S T R A T I V E   A R E A S-----------
GENERAL LANDS CLASSIFICATION  GREEN
          4-10-091
          4-10-092
          4-11-091
COAL DEVELOPMENT REGION       NORTHERN FORESTED
          4-10-091
          4-10-092
                                                                  PAGE 01 OF 21
DC913064 PRESS PF8 => FORWARD, PF7 => BACKWARDS, PF3 => EXIT, PF12 => PRINT    .
```

2.4.2.3 Procedures Following Exploration Approval

The approval holder is responsible to ensure that all terms and conditions of the exploration approval are compiled with. This includes contacting all the interest holders and ensure all the other interests are not jeopardized by the exploration activity.

Alberta One-Call @ 1-800-242-3447 provides a free service to locate buried utility lines (utilities held by their members). They require 2 business days advance notice to respond to locating requests.

The regional "Land Manager" is to be contacted prior to starting the exploration field work.

2.4.2.3.1 Intensity of Exploration Program to Determine the Subsurface Resources

Exploration programs can be carried out effectively in a two-stage approach;
Stage 1 - a large area can be assessed in a reconnaissance manner to determine the presence of potential commercial surface materials.
Stage 2 - once a potential surface material deposit is located a more intensive evaluation is done until the area containing the amount of material required or the total deposit is outlined.

The intensive evaluation provides the land manager the justification of issuing a surface material lease agreement on public land. This evaluation will determine and document the extent and quality of the surface material within the land being applied for.

- The most widely used method of determining subsurface information is digging, auguring or drilling test holes across the area described in the application. Test holes should be dug/drilled in grid pattern to obtain a confident determination of the subsurface geology. When the area is heavily treed, the method of clearing for subsurface inventory is to be discussed with the land manager.

- An electromagnetic or ground radar survey can be used as a low impact method in combination with reduced backhoe or auger testing for determining the subsurface composition and limits of the surface material resource. Drilling equipment may have to be employed if the bottom of the deposit can't be determined by the method of used.

- The subsurface assessment can be arrived at through justifiable geological interpretation. Adjacent pits or other features that expose or give clues can be used to carry out the assessment.

A proper review of the subsurface information by the applicant will provide an inventory of the surface material that is available to be removed. Of all the steps involved in making a pit operational, this is the most important. The subsurface information will show whether an extraction operation is feasible at the selected location.

The suitability of the material types for different uses may be determined by sending a sample to a laboratory. This testing and depth determination will provide the amount and quality of the resource. An understanding of the physical characteristics of the deposit will assist in planning the blending of materials from different areas to produce useable products and help optimize the potential of the resource.

2.4.2.3.2 Determining the Available Volume of Surface Materials

The test information is to be used for the calculation of the volumes of the resource, topsoil, overburden and reject material.

2.4.2.4 Exploration Information to be Collected

Any exploration holes that are drilled or dug must be described in terms of the materials that are found. Any geophysical survey that is carried out is to be described along with the results and the interpretation of the results. This information is to be given to AENV after the exploration work has been completed. **The information will be treated as confidential and be used for land/resource management purposes.**

The location of exploration holes or survey lines are to be numbered and shown on the map or aerial photographs as submitted with the application.

The material types, their depths and the water level are to be described with reference made to the appropriate, numbered test hole. Material types that should be noted are:

Material Types	**Abbreviation**
Organic Topsoil	T
Silt	Si
Clay	C
Sand	S
Gravel	G
Water Level (at time of exploration)	W
Bedrock	BR

Test Hole Log Descriptions (SME000099 Exploration Stage)

Hole #	Depth of Hole	Material Type	Description
1	0.0 - 0.7 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.7- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
2	0.0 - 0.7 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.7- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
3	0.0 - 0.7 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.7- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
4	0.0 - 0.5 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
5	0.0 - 0.5 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
6	0.0 - 0.5 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
7	0.0 - 0.5 m	T	-Organic Soils
	0.6 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
8	0.0 - 0.5 m	T	-Organic Soils
	0.6 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
9	0.0 - 0.7 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.7- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
10	0.0 - 0.7 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.7- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
11	0.0 - 0.7 m	T	-Organic Soils
	0.6 m	W	-Top of Water Table
	0.7- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
12	0.0 - 0.7 m	T	-Organic Soils
	0.55 m	W	-Top of Water Table
	0.7- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
13	0.0 - 0.7 m	T	-Organic Soils
	0.6 m	W	-Top of Water Table
	0.7 - 0.9 m	S&S	- Well sorted layers
			of silt and sand
	0.9 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
14	0.0 - 0.7 m	T	-Organic Soils
	0.6 m	W	-Top of Water Table
	0.7 - 1.3 m	S&S	- Well sorted layers
			of silt and sand
	1.3 - 1.7m	S&G	-Silt & Clay 7%
			-Sand 50%
			-Gravel 43%
			Fine 62%
			Pebbles 30%
			Cobbles 8%
	1.7 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
15	0.0 - 0.5 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
16	0.0 - 0.5 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
17	0.0 - 0.5 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
18	0.0 - 0.7 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.7- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
19	0.0 - 0.5 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
20	0.0 - 0.5 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole

21	0.0 - 0.5 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
22	0.0 - 0.5 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
23	0.0 - 0.5 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
24	0.0 - 0.5 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
25	0.0 - 0.5 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
26	0.0 - 0.7 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.7- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
27	0.0 - 0.5 m	T	-Organic Soils
	0.5 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
28	0.0 - 0.5 m	T	-Organic Soils
	0.55 m	W	-Top of Water Table
	0.5 - 0.9 m	Si&S	- Well sorted layers of silt and sand
	0.9 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
29	0.0 - 0.5 m	T	-Organic Soils
	0.55 m	W	-Top of Water Table
	0.5- 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
30	0.0 - 0.5 m	T	-Organic Soils
	0.55 m	W	-Top of Water Table
	0.5 - 0.9 m	Si&S	- Well sorted layers of silt and sand
	0.9 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole

31	0.0 - 0.5 m	Si&S	-Minor amounts of clay present
	0.5 - 2.0 m	S&G	-Silt & Clay 9%
			-Sand 40%
			-Gravel 51%
			Fine 30%
			Pebbles 43%
			Cobbles 27%
	0.65 m	W	-Top of Water Table
	2.0 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
32	0.0 - 0.5 m	Si&S	-Minor amounts of clay present
	0.5 - 2.0 m	S&G	-Silt & Clay 9%
			-Sand 40%
			-Gravel 51%
			Fine 30%
			Pebbles 43%
			Cobbles 27%
	0.65 m	W	-Top of Water Table
	2.0 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
33	0.0 - 0.5 m	Si&S	-Minor amounts of clay present
	0.5 - 2.0 m	S&G	-Silt & Clay 9%
			-Sand 40%
			-Gravel 51%
			Fine 30%
			Pebbles 43%
			Cobbles 27%
	0.65 m	W	-Top of Water Table
	2.0 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
34	0.0 - 0.5 m	Si&S	-Minor amounts of clay present
	0.5 - 2.0 m	S&G	-Silt & Clay 9%
			-Sand 40%
			-Gravel 51%
			Fine 30%
			Pebbles 43%
			Cobbles 27%
	0.65 m	W	-Top of Water Table
	2.0 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole

35	0.0 - 0.5 m	Si&S	-Minor amounts of clay present
	0.5 - 2.0 m	S&G	-Silt & Clay 9%
			-Sand 40%
			-Gravel 51%
			Fine 30%
			Pebbles 43%
			Cobbles 27%
	0.65 m	W	-Top of Water Table
	2.0 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
36	0.0 - 0.5 m	Si&S	-Minor amounts of clay present
	0.5 - 2.0 m	S&G	-Silt & Clay 9%
			-Sand 40%
			-Gravel 51%
			Fine 30%
			Pebbles 43%
			Cobbles 27%
	0.65 m	W	-Top of Water Table
	2.0 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
37	0.0 - 0.5 m	Si&S	-Minor amounts of clay present
	0.5 - 2.0 m	S&G	-Silt & Clay 9%
			-Sand 40%
			-Gravel 51%
			Fine 30%
			Pebbles 43%
			Cobbles 27%
	0.65 m	W	-Top of Water Table
	2.0 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
38	0.0 - 0.5 m	Si&S	-Minor amounts of clay present
	0.5 - 2.0 m	S&G	-Silt & Clay 9%
			-Sand 40%
			-Gravel 51%
			Fine 30%
			Pebbles 43%
			Cobbles 27%
	0.65 m	W	-Top of Water Table
	2.0 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
39	0.0 - 0.5 m	Si&S	-Minor amounts of clay present
	0.5 - 2.0 m	S&G	-Silt & Clay 9%
			-Sand 40%
			-Gravel 51%
			Fine 30%
			Pebbles 43%
			Cobbles 27%
	0.65 m	W	-Top of Water Table
	2.0 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
40	0.0 - 0.5 m	Si&S	-Minor amounts of clay present
	0.5 - 2.0 m	S&G	-Silt & Clay 9%
			-Sand 40%
			-Gravel 51%
			Fine 30%
			Pebbles 43%
			Cobbles 27%
	0.65 m	W	-Top of Water Table
	2.0 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
41	0.0 - 0.7 m	T	-Organic Soils
	0.6 m	W	-Top of Water Table
	0.7 - 1.3 m	Si&S	- Well sorted layers of silt and sand
	1.3 - 1.7m	S&G	-Silt & Clay 7%
			-Sand 50%
			-Gravel 43%
			Fine 62%
			Pebbles 30%
			Cobbles 8%
	1.7 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
42	0.0 - 0.7 m	T	-Organic Soils
	0.6 m	W	-Top of Water Table
	0.7 - 1.3 m	Si&S	- Well sorted layers of silt and sand
	1.3 - 1.7m	S&G	-Silt & Clay 7%
			-Sand 50%
			-Gravel 43%
			Fine 62%
			Pebbles 30%
			Cobbles 8%
	1.7 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole

43	0.0 - 0.7 m	T	-Organic Soils
	0.6 m	W	-Top of Water Table
	0.7 - 1.3 m	Si&S	- Well sorted layers
			of silt and sand
	1.3 - 1.7m	S&G	-Silt & Clay 7%
			-Sand 50%
			-Gravel 43%
			Fine 62%
			Pebbles 30%
			Cobbles 8%
	1.7 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
44	0.0 - 0.7 m	T	-Organic Soils
	0.6 m	W	-Top of Water Table
	0.7 - 1.3 m	Si&S	- Well sorted layers
			of silt and sand
	1.3 - 1.7m	S&G	-Silt & Clay 7%
			-Sand 50%
			-Gravel 43%
			Fine 62%
			Pebbles 30%
			Cobbles 8%
	1.7 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole
45	0.0 - 0.7 m	T	-Organic Soils
	0.6 m	W	-Top of Water Table
	0.7 - 1.3 m	Si&S	- Well sorted layers
			of silt and sand
	1.3 - 1.7m	S&G	-Silt & Clay 7%
			-Sand 50%
			-Gravel 43%
			Fine 62%
			Pebbles 30%
			Cobbles 8%
	1.7 - 6.5 m	C	-Glacial Clays
	6.5 m		-End of Hole

Figure 2: Sample Exploration Results

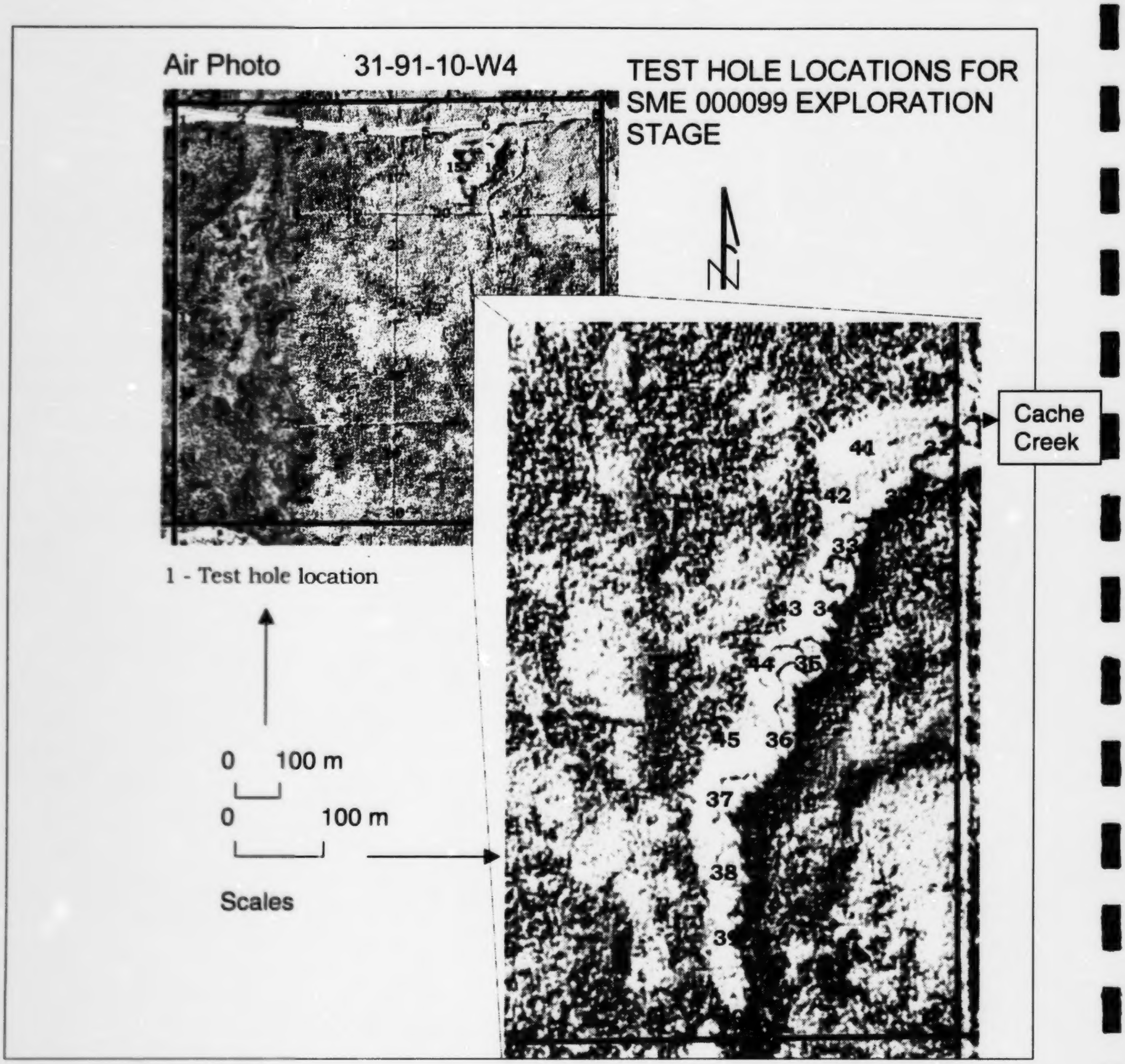

Air Photo 31-91-10-W4
TEST HOLE LOCATIONS FOR SME 000099 EXPLORATION STAGE
N
1 - Test hole location
0 100 m
0 100 m
Scales
Cache Creek
41
42
33
43
34
44
35
45
36
37
38

Figure 2a: Example of Test Hole Location Plan

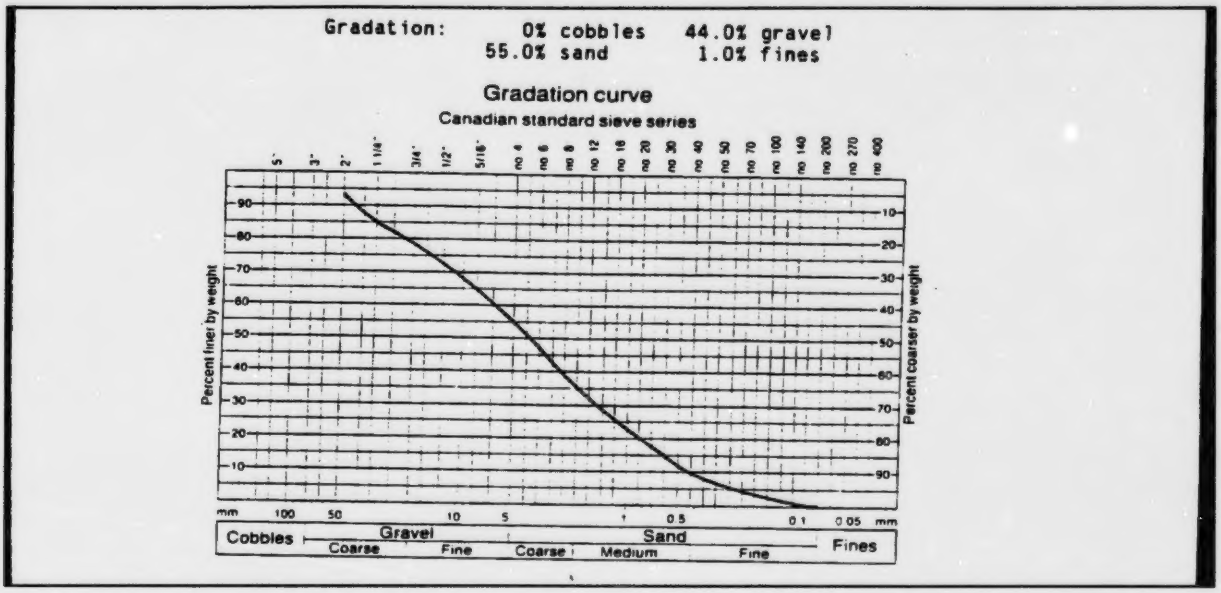


Figure 2b: Sieve Analysis

Laboratory analysis will help to determine composition of the material. If any samples of material are sent to a laboratory for analysis, the results of those tests should be submitted along with the exploration data.

2.4.2.5 Reclamation of Exploration Activity

The Environmental Protection and Enhancement Act/Public Lands Act specifies an operator has a duty to conserve and reclaim disturbed land. The operator is obligated to:

- Strip and salvage the topsoil,
- Backfill all excavated test holes,
- Compact the replaced material,
- Cap the disturbed area with the topsoil
- AENV requires that certain measures be taken to prevent the spread of forest fires:
  a) Use avoidance type clearing
  b) Where lines are to be cut through forested areas, the brush must be separated. This means that every long brush pile (called "windrows") can be only 60 metres in length, and must be followed by an eight metre clear area.
  c) All leaning trees (called "leaners") along a cutline, plus the parts of broken trees that stick out of windrows should be bucked up, limbed and flattened to the ground. Flames can travel up these trees into the standing timber and help spread a fire.

- A Field Officer may require the applicant to roll back the brush on exploration trails on some sites. This helps to spread native seeds, it slows water run-off and it holds down the topsoil.

- Timber salvage is expected to occur unless waived by AENV (see Subsection 3.4.2).

- All exploration lines must be revegetated and appropriate erosion control methods implemented before the reclamation obligations are completed.

- Any other special reclamation requirements will be outlined in writing by a Departmental Officer.

- Within the 90-day term of the exploration approval, the applicant must carry out the activities described below.

- Complete the exploration survey, submit the exploration data and reclaim the area.

- Submit the application for a Surface Material Lease

- Additional time to complete reclamation may be granted in writing by a Field Officer.

Note: A "Letter of Clearance" is required on any area that has been disturbed by the applicant which is not included in a follow-up approval for a surface material lease/licence. If the lease application is not approved, the applicant is responsible for reclaiming all disturbed areas as required by the Surface Material Exploration authorization.

In all cases, AENV is to receive the applicant's exploration data as a condition of the authority.

Request for Letter of Clearance

TO: Alberta Environment
Land Administration Division
5^{th} Floor, 9915 – 108^{th} Street
Edmonton, Alberta
Phone: (780) 427-3570
Fax: (780) 422-9670

Attention: Commercial/Gravel & Shoreland Unit

REQUEST FOR LETTER OF CLEARANCE

Got Gravel Inc., P.O. Box 123, Anywhere, AB. (780) 555-4455
(Operator's Name, Address and Phone Number)

I, **Rockal Day** hereby apply for a letter of clearance for

SME 000099 on **Sec. 31 091-10-4**
(Surface Materials Exploration No.) **(Legal Description)**

☒ This application is my verification that:

- All improvements have been removed
- Brush disposal is complete
- Backsloping is complete
- Recontouring is complete
- Revegetation is complete (80% or greater revegetation)

and TEST DATA FROM THE EXPLORATION PROGRAM IS ENCLOSED.

OR

☐ This is my verification that no entry was made on these lands.

Got Gravel Inc., P.O. Box 123, Anywhere, AB. (780) 555-4455
(Clean-up Contractor's Name and Address)

The required reclamation was completed on **Aug 2001** (Date) and I inspected this site on **Sept. 10, 2001** (Date) and found all conditions to be in a satisfactory condition which should permit the issuing of a letter of clearance.

I understand that if the department finds the reclamation satisfactory, and if the operator is not indebted to the department, the security deposit will be refunded.

Dec. 19, 2001
(Date)

Rockal Day
Signature of Applicant

The information requested on this form will be used to authorize use of public land. This information is requested in accordance with the Public Lands Act and is protected by the provisions of the Freedom of Information and Protection of Privacy Act. For further information, contact the Land Administration Division at (780) 427-3570.

2.4.3 Surface Materials Licence (SMC)

- Surface Material Licences are issued for up to one year to individuals or companies and permit the removal of a specific volume of surface material from a specific area.

- An application and operating plan are required, which are reviewed by the land managers and any other concerned agencies.

- The volume of aggregate to be removed is specific in the licence and all fees are paid in advance.

- Approval of the application will identify the restrictions that may be imposed on such an operation.

- Once approval has been issued the licencee is responsible to accurately establish and mark the boundaries.

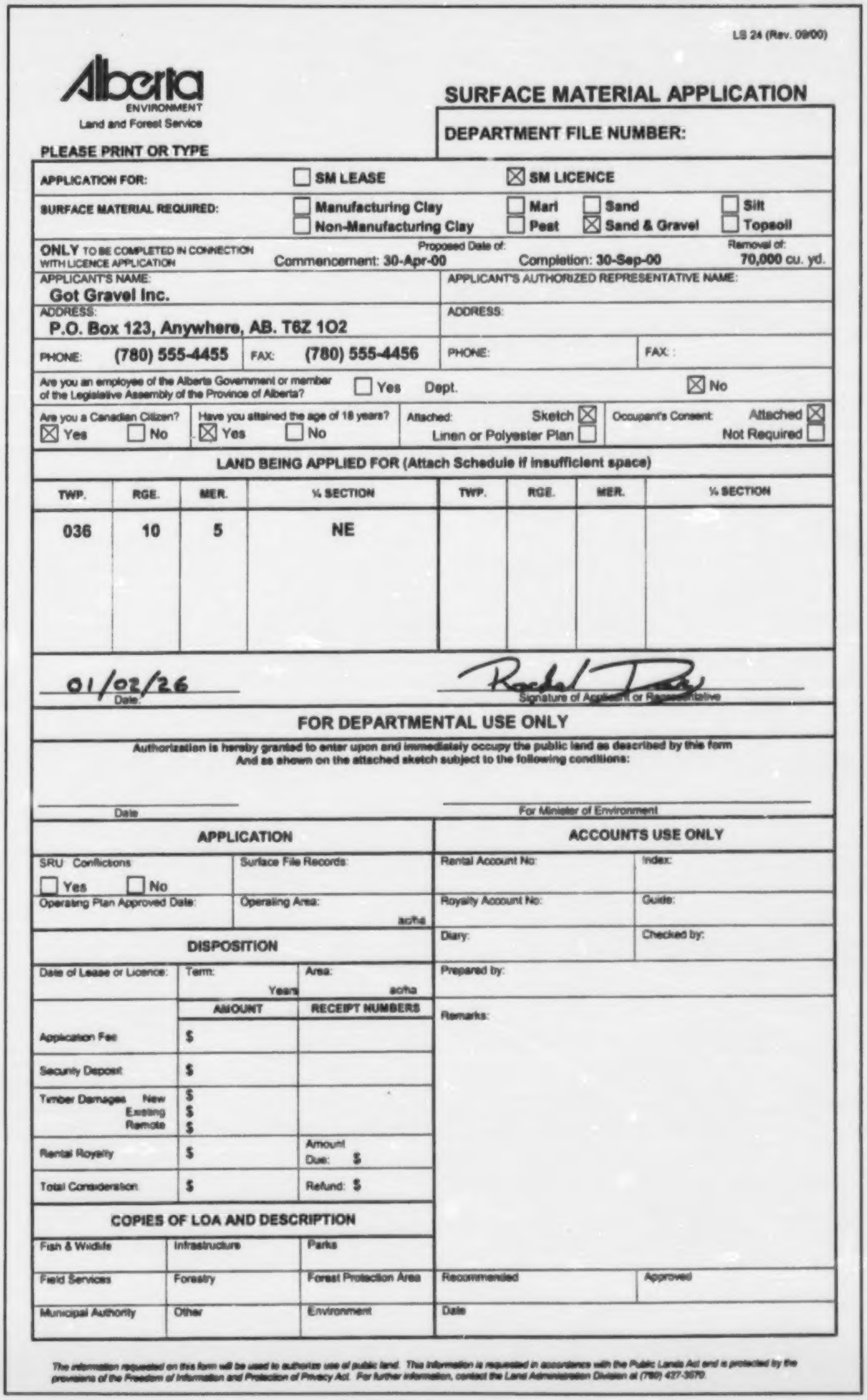
- Reclamation and reclamation certification are the responsibility of the licencee.

- The Security Deposit is refunded upon the issuance of a reclamation certificate.

- Within 30 days of the removal of the material or the "Expiry Date", which ever comes first, the operator is to submit an "Surface Material Return". The amount and type of material removed is to be reported. Surface material amounts are to be reported by truck box volume capacities, loader bucket capacity or scaled weight. If larger amounts are required as specified in the licence, the operator is to contact the same office as the issuance of the licence and obtain a new SMC.

- The amount removed over the amount specified by the licence is illegal and subject to a penalty fee.

Form – Application for Surface Material Licence



LS 24 (Rev. 09/00)

Alberta
ENVIRONMENT
Land and Forest Service

SURFACE MATERIAL APPLICATION

DEPARTMENT FILE NUMBER:

PLEASE PRINT OR TYPE

APPLICATION FOR: ☐ SM LEASE ☒ SM LICENCE

SURFACE MATERIAL REQUIRED: ☐ Manufacturing Clay ☐ Non-Manufacturing Clay ☐ Marl ☐ Peat ☐ Sand ☒ Sand & Gravel ☐ Silt ☐ Topsoil

ONLY TO BE COMPLETED IN CONNECTION WITH LICENCE APPLICATION
Proposed Date of: Commencement: 30-Apr-00 Completion: 30-Sep-00
Removal of: 70,000 cu. yd.

APPLICANT'S NAME: Got Gravel Inc.	APPLICANT'S AUTHORIZED REPRESENTATIVE NAME:
ADDRESS: P.O. Box 123, Anywhere, AB. T6Z 1O2	ADDRESS:
PHONE: (780) 555-4455 FAX: (780) 555-4456	PHONE: FAX: :

Are you an employee of the Alberta Government or member of the Legislative Assembly of the Province of Alberta? ☐ Yes Dept. ☒ No

Are you a Canadian Citizen? ☒ Yes ☐ No

Have you attained the age of 18 years? ☒ Yes ☐ No

Attached: Sketch ☒ Linen or Polyester Plan ☐

Occupant's Consent: Attached ☒ Not Required ☐

LAND BEING APPLIED FOR (Attach Schedule if insufficient space)

TWP.	RGE.	MER.	¼ SECTION	TWP.	RGE.	MER.	¼ SECTION
036	10	5	NE				

01/02/26
Date

Signature of Applicant or Representative

FOR DEPARTMENTAL USE ONLY

Authorization is hereby granted to enter upon and immediately occupy the public land as described by this form And as shown on the attached sketch subject to the following conditions:

Date

For Minister of Environment

APPLICATION

SRU Conflictions ☐ Yes ☐ No

Surface File Records:

Operating Plan Approved Date:

Operating Area: ac/ha

DISPOSITION

Date of Lease or Licence:

Term: Years

Area: ac/ha

	AMOUNT	RECEIPT NUMBERS
Application Fee	$	
Security Deposit	$	
Timber Damages New Existing Remote	$ $ $	
Rental Royalty	$	Amount Due: $
Total Consideration	$	Refund: $

COPIES OF LOA AND DESCRIPTION

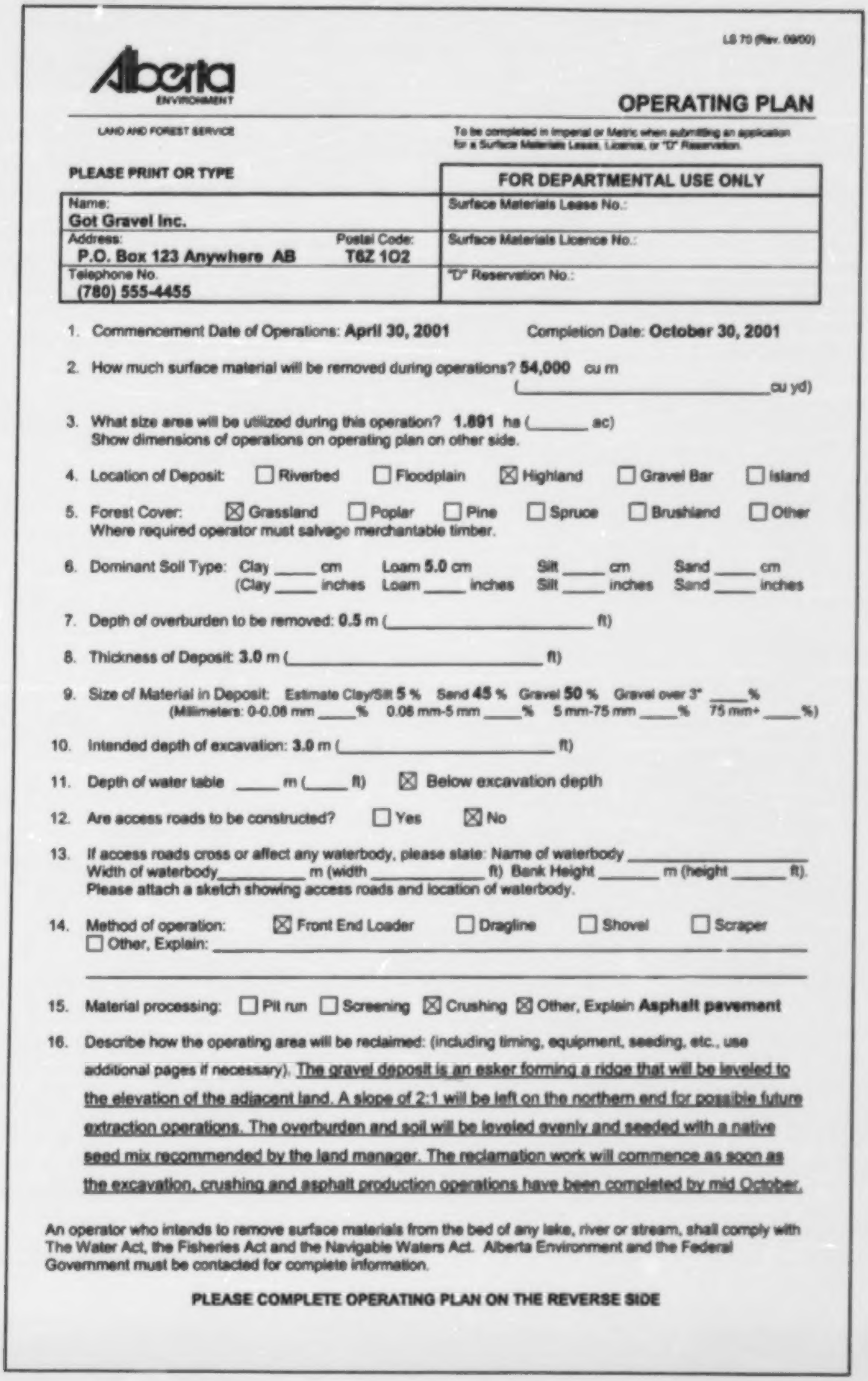
Fish & Wildlife	Infrastructure	Parks
Field Services	Forestry	Forest Protection Area
Municipal Authority	Other	Environment

ACCOUNTS USE ONLY

Rental Account No:	Index:
Royalty Account No:	Guide:
Diary:	Checked by:
Prepared by:	
Remarks:	
Recommended	Approved
Date	

The information requested on this form will be used to authorize use of public land. This information is requested in accordance with the Public Lands Act and is protected by the provisions of the Freedom of Information and Protection of Privacy Act. For further information, contact the Land Administration Division at (780) 427-3570.

Form – Operating Plan



LS 70 (Rev. 09/00)

Alberta
ENVIRONMENT

LAND AND FOREST SERVICE

OPERATING PLAN

To be completed in Imperial or Metric when submitting an application for a Surface Materials Lease, Licence, or "D" Reservation.

PLEASE PRINT OR TYPE

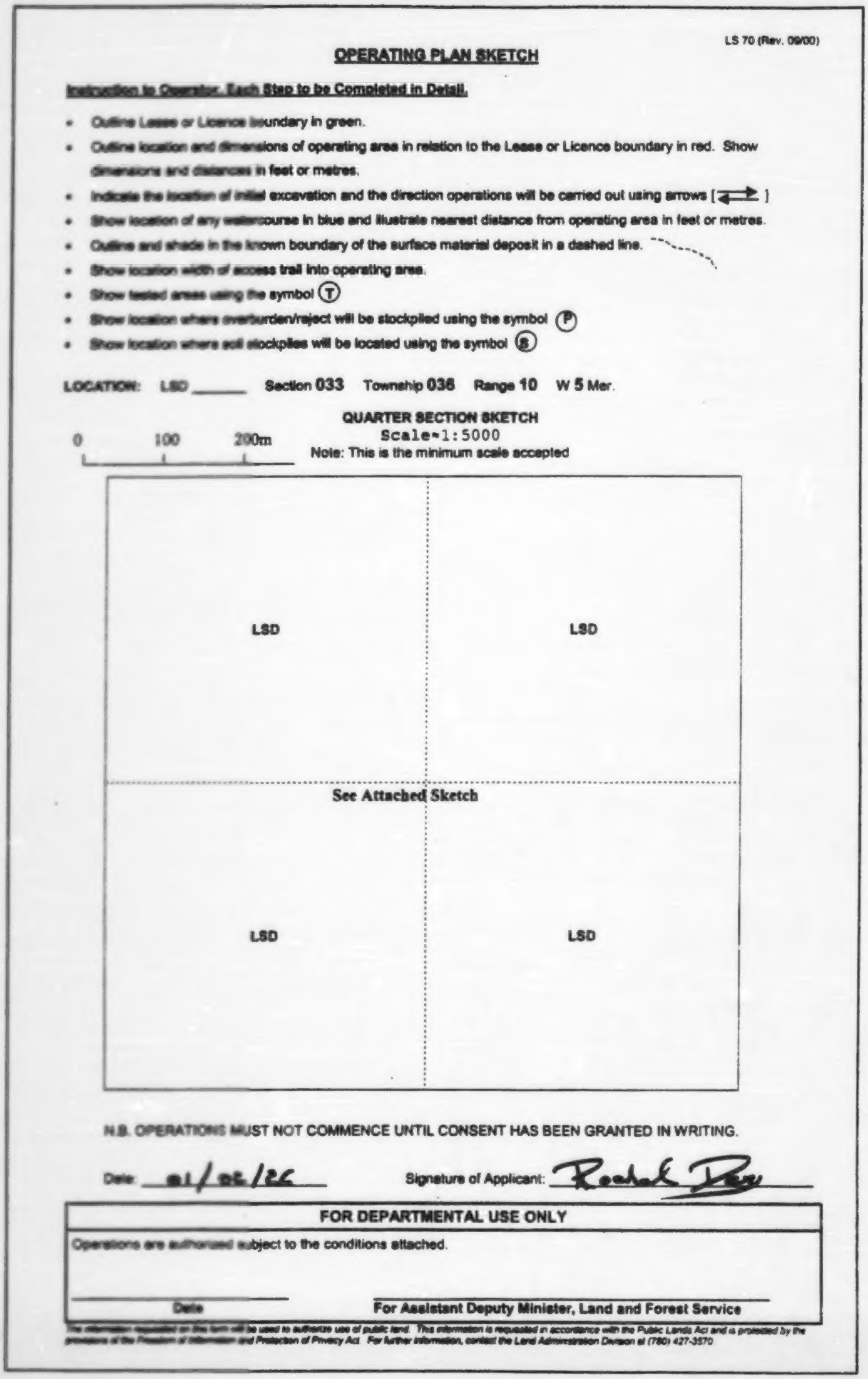
		FOR DEPARTMENTAL USE ONLY
Name: **Got Gravel Inc.**		Surface Materials Lease No.:
Address: **P.O. Box 123 Anywhere AB**	Postal Code: **T6Z 1O2**	Surface Materials Licence No.:
Telephone No. **(780) 555-4455**		"D" Reservation No.:

1. Commencement Date of Operations: **April 30, 2001** Completion Date: **October 30, 2001**
2. How much surface material will be removed during operations? **54,000** cu m (____ cu yd)
3. What size area will be utilized during this operation? **1.891** ha (____ ac) Show dimensions of operations on operating plan on other side.
4. Location of Deposit: ☐ Riverbed ☐ Floodplain ☒ Highland ☐ Gravel Bar ☐ Island
5. Forest Cover: ☒ Grassland ☐ Poplar ☐ Pine ☐ Spruce ☐ Brushland ☐ Other
Where required operator must salvage merchantable timber.
6. Dominant Soil Type: Clay ____ cm Loam **5.0** cm Silt ____ cm Sand ____ cm
(Clay ____ inches Loam ____ inches Silt ____ inches Sand ____ inches
7. Depth of overburden to be removed: **0.5** m (____ ft)
8. Thickness of Deposit: **3.0** m (____ ft)
9. Size of Material in Deposit: Estimate Clay/Silt **5** % Sand **45** % Gravel **50** % Gravel over 3" ____%
(Millimeters: 0-0.08 mm ____% 0.08 mm-5 mm ____% 5 mm-75 mm ____% 75 mm+ ____%)
10. Intended depth of excavation: **3.0** m (____ ft)
11. Depth of water table ____ m (____ ft) ☒ Below excavation depth
12. Are access roads to be constructed? ☐ Yes ☒ No
13. If access roads cross or affect any waterbody, please state: Name of waterbody ____
Width of waterbody ____ m (width ____ ft) Bank Height ____ m (height ____ ft).
Please attach a sketch showing access roads and location of waterbody.
14. Method of operation: ☒ Front End Loader ☐ Dragline ☐ Shovel ☐ Scraper
☐ Other, Explain: ____
15. Material processing: ☐ Pit run ☐ Screening ☒ Crushing ☒ Other, Explain **Asphalt pavement**
16. Describe how the operating area will be reclaimed: (including timing, equipment, seeding, etc., use additional pages if necessary). The gravel deposit is an esker forming a ridge that will be leveled to the elevation of the adjacent land. A slope of 2:1 will be left on the northern end for possible future extraction operations. The overburden and soil will be leveled evenly and seeded with a native seed mix recommended by the land manager. The reclamation work will commence as soon as the excavation, crushing and asphalt production operations have been completed by mid October.

An operator who intends to remove surface materials from the bed of any lake, river or stream, shall comply with The Water Act, the Fisheries Act and the Navigable Waters Act. Alberta Environment and the Federal Government must be contacted for complete information.

PLEASE COMPLETE OPERATING PLAN ON THE REVERSE SIDE

Form - Operating Plan Sketch



LS 70 (Rev. 09/00)

OPERATING PLAN SKETCH

Instruction to Operator. Each Step to be Completed in Detail.

- Outline Lease or Licence boundary in green.
- Outline location and dimensions of operating area in relation to the Lease or Licence boundary in red. Show dimensions and distances in feet or metres.
- Indicate the location of initial excavation and the direction operations will be carried out using arrows [⇄]
- Show location of any watercourse in blue and illustrate nearest distance from operating area in feet or metres.
- Outline and shade in the known boundary of the surface material deposit in a dashed line.
- Show location width of access trail into operating area.
- Show tested areas using the symbol Ⓣ
- Show location where overburden/reject will be stockpiled using the symbol Ⓟ
- Show location where soil stockpiles will be located using the symbol Ⓢ

LOCATION: LSD ______ Section 033 Township 036 Range 10 W 5 Mer.

QUARTER SECTION SKETCH

Scale-1:5000

Note: This is the minimum scale accepted

0 100 200m

LSD	LSD
See Attached Sketch LSD	LSD

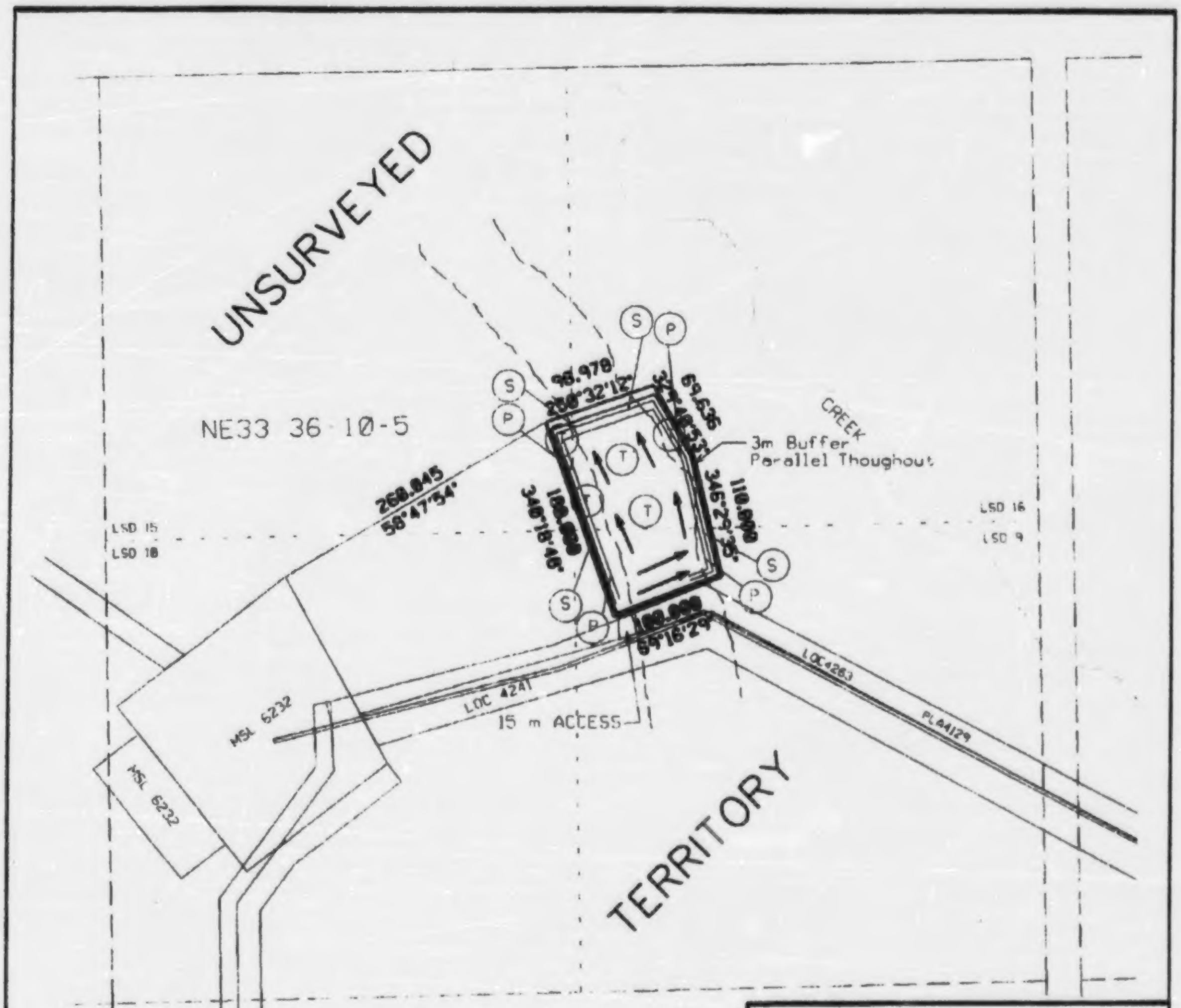
N.B. OPERATIONS MUST NOT COMMENCE UNTIL CONSENT HAS BEEN GRANTED IN WRITING.

Date: 01/06/26 Signature of Applicant: Rachel Day

FOR DEPARTMENTAL USE ONLY	
Operations are authorized subject to the conditions attached.	
Date	For Assistant Deputy Minister, Land and Forest Service

The information requested on this form will be used to authorize use of public land. This information is requested in accordance with the Public Lands Act and is protected by the provisions of the Freedom of Information and Protection of Privacy Act. For further information, contact the Land Administration Division at (780) 427-3570

Surface Material Licence Plan



UNSURVEYED
NE33 36-10-5
TERRITORY
CREEK
3m Buffer Parallel Thoughout
LSD 15
LSD 10
LSD 16
LSD 9
98.978
69.636
268.845
58°47'54"
180.000
340°18'46"
110.000
345°29'35"
100.000
69°16'29"
MSL 6232
MSL 6232
LOC 4241
15 m ACCESS
LOC4263
PLA4129
S
P
T

PLAN SHOWING PROPOSED LOCATION
OF
SURFACE MATERIAL LICENCE

AREA OF LICENCE SITE = 1.891 HA

TSB STAMP AREA

PLAN PREPARED FOR : GOT GRAVEL INC.
PLAN PREPARED BY : **WORRYFREE SURVEYS**
FILE # : 1052

SCALE: 1:5000
DISTANCES IN METRES

REVISIONS:

2.4.4 Surface Materials Lease (SML)

- In cases where the subsurface composition is unknown, a Surface Materials Exploration program must be conducted prior to the submission of a SML.

- A lease allows for long term, exclusive development of the surface material resources by an individual or company.

- Submission of a Surface Material Lease application along with the results of the exploration program assist the land manager to evaluate if surface material extraction is an appropriate land use. **See Section 3 for Site assessment considerations.**

- Approval of the application will identify the site-specific restrictions that may be imposed on such an operation.

- Once approval has been issued the lessee is responsible to accurately establish (surveyed by an Alberta Land Surveyor) and mark the lease boundaries.

- The lessee is to have a detailed site assessment of the surface material and the land's associated resources done for the preparation a "Conservation and Reclamation Plan" on leases 5 acres or larger or within environmentally sensitive areas (e.g., 100 year flood plain). **See Section 5 for preparing a Conservation & Reclamation Plan.**

- Once the "Conservation and Reclamation Plan" is approved, the extraction operation can commence.

- Reclamation and reclamation certification are a responsibility of the lessee.

2.4.5 Government Reservations

- AENV and AFRD have potential sand and gravel deposits flagged under Protective Notation (PNT) and Consultative Notation (CNT) Reservations for resource management purposes. The evaluation of the potential areas comes from various sources such as the Alberta Geological Survey, AENV/AFRD land managers, and AENV's "Environmental Geologist". These Reservations are open to surface material exploration, licence or lease applications.

- Alberta Infrastructure have interests held under Disposition Reservations (DRS), Protective Notations (PNT) and Consultative Notations (CNT). Alberta Infrastructure may offer their DRS Reservation areas as source options for highway projects. CNTs are open to surface material exploration, licence or lease applications. Alberta Infrastructure review all such applications and can reject or restrict any proposal where their projected needs require the resources.

2.4.6 Temporary Field Authority

If the material is being used in association with a Licence of Occupation, Mineral Surface Lease, Pipeline Agreement or Borrow Pit Approval, a Temporary Field Authorization is required.

2.4.7 Access Requirements

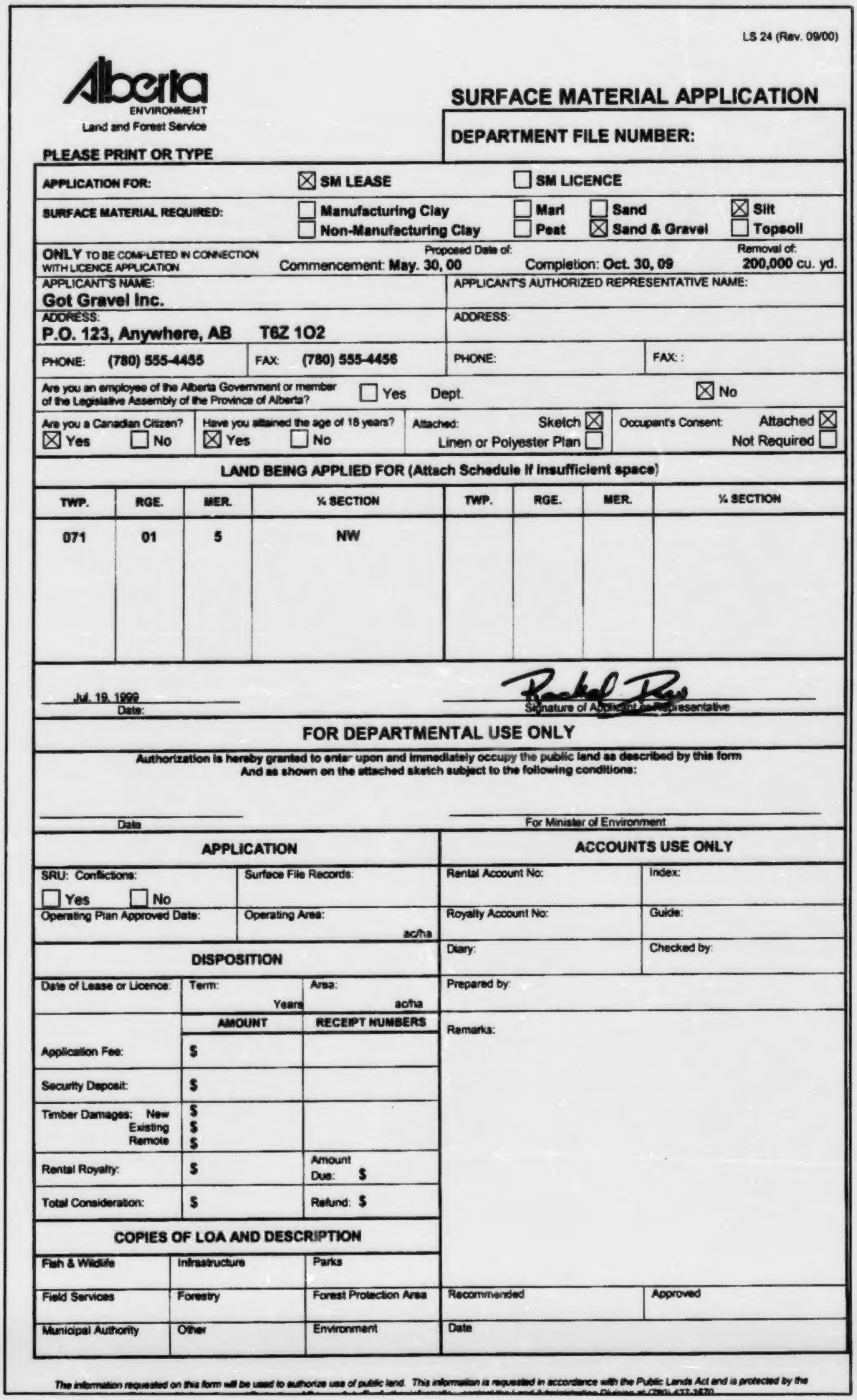
The access to a proposed surface material removal operation is an important consideration in the approval process. If the site is accessible only by crossing private land, an agreement must be obtained from the landowner. Access across public land requires the following:

- If a new road must be constructed, or if no other authority administers an existing road, an application must be made for a Licence of Occupation, and it must be approved along with the surface materials licence/lease;

- If access is by way of a road that is legally held by another party, then a Road-Use Agreement with the holder of that authority may be required; and

- Access from a secondary road or highway may require an Access Development Permit from AI or the local road authority.

Form – Application for Surface Material Lease



LS 24 (Rev. 09/00)

Alberta
ENVIRONMENT
Land and Forest Service

SURFACE MATERIAL APPLICATION

DEPARTMENT FILE NUMBER:

PLEASE PRINT OR TYPE

APPLICATION FOR: ☒ **SM LEASE** ☐ **SM LICENCE**

SURFACE MATERIAL REQUIRED: ☐ **Manufacturing Clay** ☐ **Non-Manufacturing Clay** ☐ **Marl** ☐ **Peat** ☐ **Sand** ☒ **Sand & Gravel** ☒ **Silt** ☐ **Topsoil**

ONLY TO BE COMPLETED IN CONNECTION WITH LICENCE APPLICATION
Proposed Date of: Commencement: **May. 30, 00** Completion: **Oct. 30, 09**
Removal of: **200,000** cu. yd.

APPLICANT'S NAME: **Got Gravel Inc.**
ADDRESS: **P.O. 123, Anywhere, AB T6Z 1O2**
PHONE: **(780) 555-4455** FAX: **(780) 555-4456**

APPLICANT'S AUTHORIZED REPRESENTATIVE NAME:
ADDRESS:
PHONE: FAX: :

Are you an employee of the Alberta Government or member of the Legislative Assembly of the Province of Alberta? ☐ Yes Dept. ☒ No

Are you a Canadian Citizen? ☒ Yes ☐ No
Have you attained the age of 18 years? ☒ Yes ☐ No
Attached: Sketch ☒ Linen or Polyester Plan ☐
Occupant's Consent: Attached ☒ Not Required ☐

LAND BEING APPLIED FOR (Attach Schedule if insufficient space)

TWP.	RGE.	MER.	¼ SECTION	TWP.	RGE.	MER.	¼ SECTION
071	01	5	NW				

Jul. 19, 1999
Date:

Signature of Applicant or Representative

FOR DEPARTMENTAL USE ONLY

Authorization is hereby granted to enter upon and immediately occupy the public land as described by this form And as shown on the attached sketch subject to the following conditions:

Date

For Minister of Environment

APPLICATION

SRU: Conflictions: ☐ Yes ☐ No	Surface File Records:
Operating Plan Approved Date:	Operating Area: ac/ha

DISPOSITION

Date of Lease or Licence:	Term: Years	Area: ac/ha
	AMOUNT	**RECEIPT NUMBERS**
Application Fee:	$	
Security Deposit:	$	
Timber Damages: New Existing Remote	$ $ $	
Rental Royalty:	$	Amount Due: $
Total Consideration:	$	Refund: $

COPIES OF LOA AND DESCRIPTION

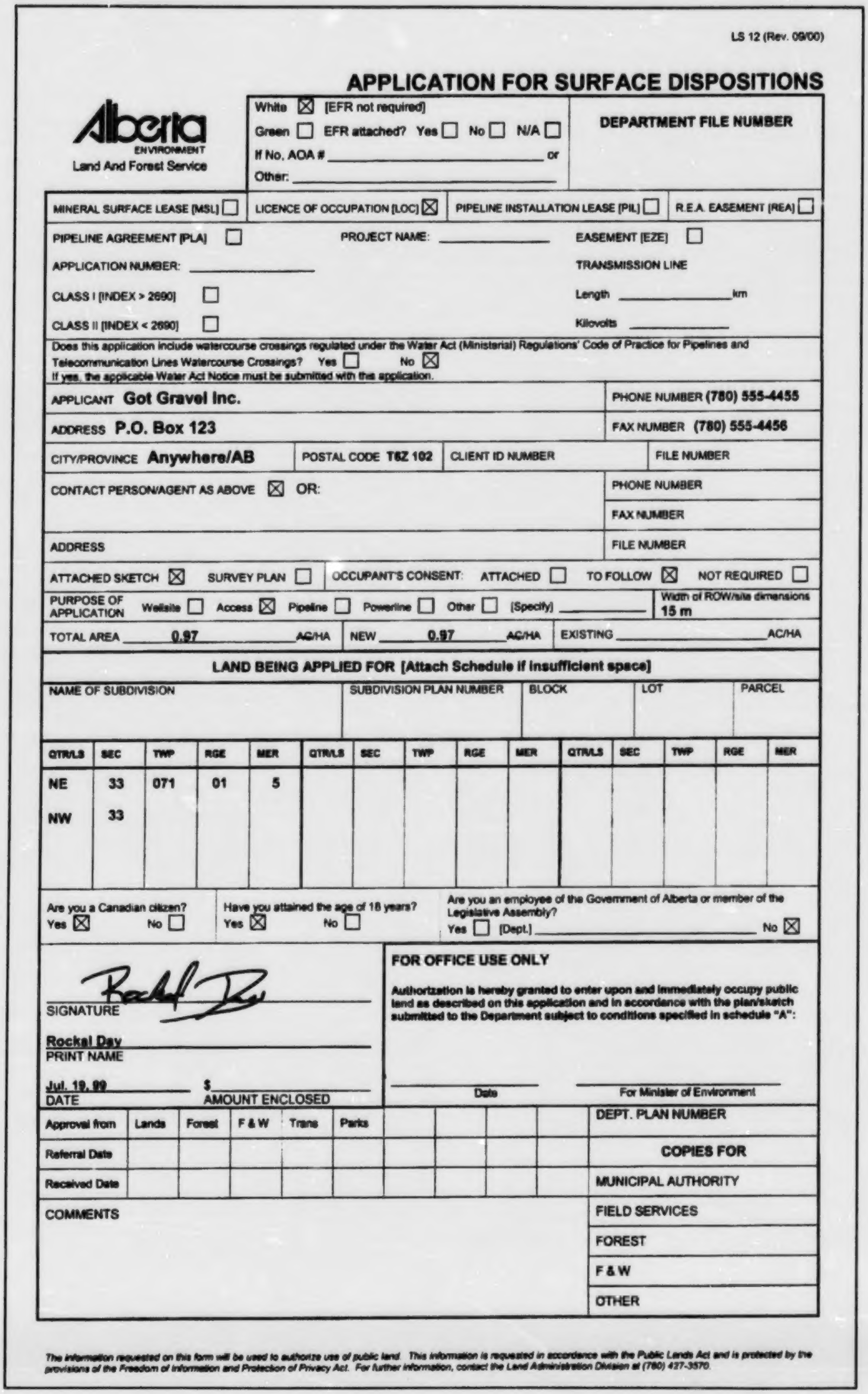
Fish & Wildlife	Infrastructure	Parks
Field Services	Forestry	Forest Protection Area
Municipal Authority	Other	Environment

ACCOUNTS USE ONLY

Rental Account No:	Index:
Royalty Account No:	Guide:
Diary:	Checked by:
Prepared by:	
Remarks:	
Recommended	Approved
Date	

The information requested on this form will be used to authorize use of public land. This information is requested in accordance with the Public Lands Act and is protected by the

Form –Application for Surface Dispositions



LS 12 (Rev. 09/00)

APPLICATION FOR SURFACE DISPOSITIONS

Alberta
ENVIRONMENT
Land And Forest Service

White ☒ [EFR not required]
Green ☐ EFR attached? Yes ☐ No ☐ N/A ☐
If No, AOA # ____________ or
Other: ____________

DEPARTMENT FILE NUMBER

MINERAL SURFACE LEASE [MSL] ☐ LICENCE OF OCCUPATION [LOC] ☒ PIPELINE INSTALLATION LEASE [PIL] ☐ R.E.A. EASEMENT [REA] ☐

PIPELINE AGREEMENT [PLA] ☐
PROJECT NAME: ____________
EASEMENT [EZE] ☐
APPLICATION NUMBER: ____________
TRANSMISSION LINE
CLASS I [INDEX > 2690] ☐
Length ____________ km
CLASS II [INDEX < 2690] ☐
Kilovolts ____________

Does this application include watercourse crossings regulated under the Water Act (Ministerial) Regulations' Code of Practice for Pipelines and Telecommunication Lines Watercourse Crossings? Yes ☐ No ☒
If yes, the applicable Water Act Notice must be submitted with this application.

APPLICANT **Got Gravel Inc.**
PHONE NUMBER **(780) 555-4455**
ADDRESS **P.O. Box 123**
FAX NUMBER **(780) 555-4456**
CITY/PROVINCE **Anywhere/AB**
POSTAL CODE **T6Z 1O2**
CLIENT ID NUMBER
FILE NUMBER
CONTACT PERSON/AGENT AS ABOVE ☒ OR:
PHONE NUMBER
FAX NUMBER
ADDRESS
FILE NUMBER

ATTACHED SKETCH ☒ SURVEY PLAN ☐ OCCUPANT'S CONSENT: ATTACHED ☐ TO FOLLOW ☒ NOT REQUIRED ☐

PURPOSE OF APPLICATION Wellsite ☐ Access ☒ Pipeline ☐ Powerline ☐ Other ☐ [Specify] ____________
Width of ROW/site dimensions **15 m**

TOTAL AREA **0.97** AC/HA NEW **0.97** AC/HA EXISTING ____________ AC/HA

LAND BEING APPLIED FOR [Attach Schedule if insufficient space]

NAME OF SUBDIVISION	SUBDIVISION PLAN NUMBER	BLOCK	LOT	PARCEL

QTR/LS	SEC	TWP	RGE	MER	QTR/LS	SEC	TWP	RGE	MER	QTR/LS	SEC	TWP	RGE	MER
NE	33	071	01	5										
NW	33													

Are you a Canadian citizen? Yes ☒ No ☐
Have you attained the age of 18 years? Yes ☒ No ☐
Are you an employee of the Government of Alberta or member of the Legislative Assembly? Yes ☐ [Dept.] ____________ No ☒

SIGNATURE

Rockal Day
PRINT NAME

Jul. 19, 99
DATE

$ ____________
AMOUNT ENCLOSED

FOR OFFICE USE ONLY

Authorization is hereby granted to enter upon and immediately occupy public land as described on this application and in accordance with the plan/sketch submitted to the Department subject to conditions specified in schedule "A":

____________ Date
____________ For Minister of Environment

Approval from	Lands	Forest	F & W	Trans	Parks				
Referral Date									
Received Date									

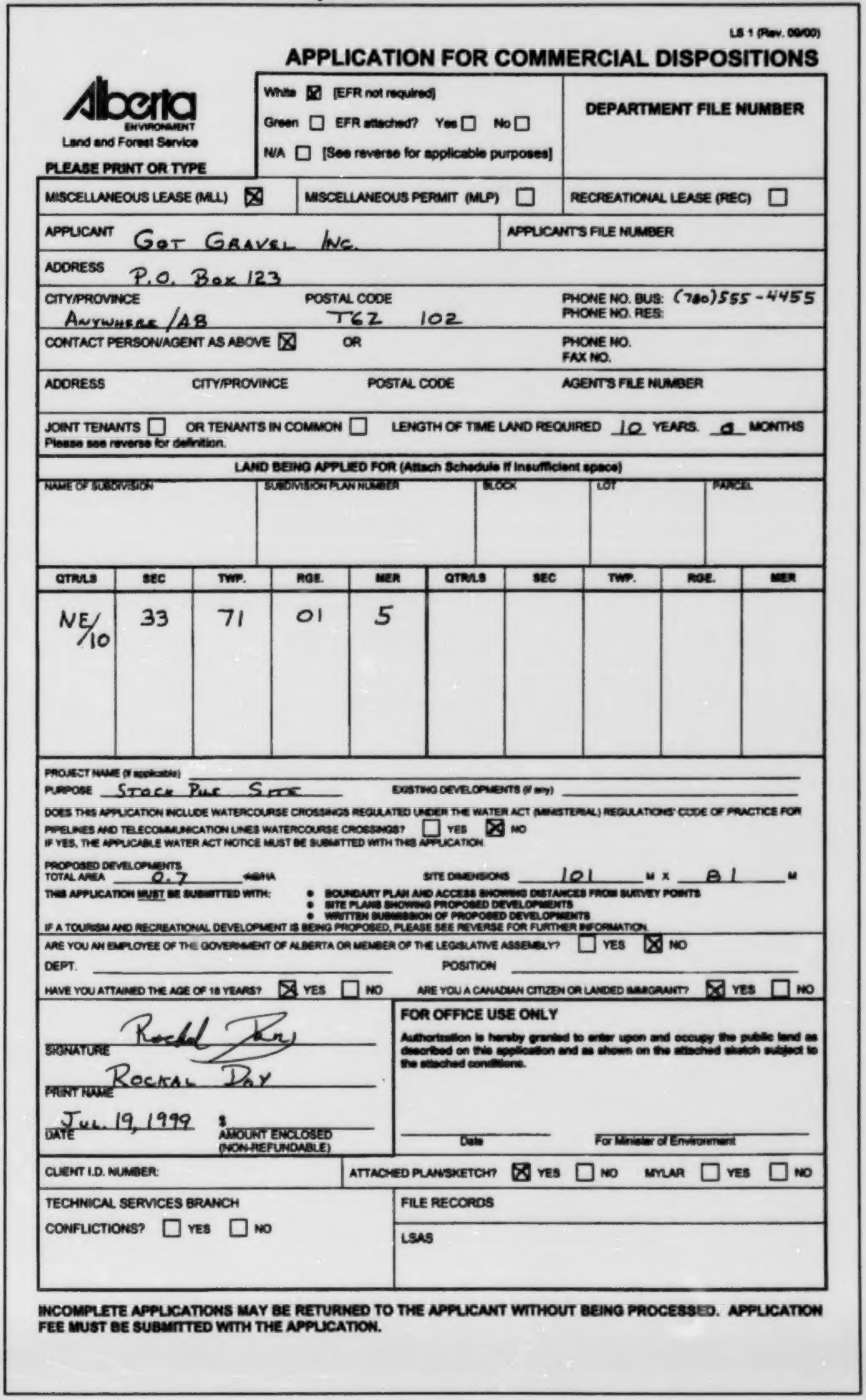
DEPT. PLAN NUMBER

COPIES FOR
MUNICIPAL AUTHORITY
FIELD SERVICES
FOREST
F & W
OTHER

COMMENTS

The information requested on this form will be used to authorize use of public land. This information is requested in accordance with the Public Lands Act and is protected by the provisions of the Freedom of Information and Protection of Privacy Act. For further information, contact the Land Administration Division at (780) 427-3570.

Form – Application for Commercial Dispositions



LS 1 (Rev. 09/00)

APPLICATION FOR COMMERCIAL DISPOSITIONS

Alberta
ENVIRONMENT
Land and Forest Service

PLEASE PRINT OR TYPE

White ☒ [EFR not required]
Green ☐ EFR attached? Yes ☐ No ☐
N/A ☐ [See reverse for applicable purposes]

DEPARTMENT FILE NUMBER

MISCELLANEOUS LEASE (MLL) ☒ MISCELLANEOUS PERMIT (MLP) ☐ RECREATIONAL LEASE (REC) ☐

APPLICANT Got Gravel Inc.
APPLICANT'S FILE NUMBER

ADDRESS P.O. Box 123

CITY/PROVINCE Anywhere /AB
POSTAL CODE T6Z 1O2
PHONE NO. BUS: (780)555-4455
PHONE NO. RES:

CONTACT PERSON/AGENT AS ABOVE ☒ OR
PHONE NO.
FAX NO.

ADDRESS
CITY/PROVINCE
POSTAL CODE
AGENT'S FILE NUMBER

JOINT TENANTS ☐ OR TENANTS IN COMMON ☐ LENGTH OF TIME LAND REQUIRED 10 YEARS. 0 MONTHS
Please see reverse for definition.

LAND BEING APPLIED FOR (Attach Schedule if insufficient space)

NAME OF SUBDIVISION	SUBDIVISION PLAN NUMBER	BLOCK	LOT	PARCEL

QTR/LS	SEC	TWP.	RGE.	MER	QTR/LS	SEC	TWP.	RGE.	MER
NE/10	33	71	01	5					

PROJECT NAME (if applicable)
PURPOSE Stock Pile Site
EXISTING DEVELOPMENTS (if any)

DOES THIS APPLICATION INCLUDE WATERCOURSE CROSSINGS REGULATED UNDER THE WATER ACT (MINISTERIAL) REGULATIONS' CODE OF PRACTICE FOR PIPELINES AND TELECOMMUNICATION LINES WATERCOURSE CROSSINGS? ☐ YES ☒ NO
IF YES, THE APPLICABLE WATER ACT NOTICE MUST BE SUBMITTED WITH THIS APPLICATION.

PROPOSED DEVELOPMENTS
TOTAL AREA 0.7 AC/HA
SITE DIMENSIONS 101 M x 81 M

THIS APPLICATION **MUST** BE SUBMITTED WITH:

- BOUNDARY PLAN AND ACCESS SHOWING DISTANCES FROM SURVEY POINTS
- SITE PLANS SHOWING PROPOSED DEVELOPMENTS
- WRITTEN SUBMISSION OF PROPOSED DEVELOPMENTS

IF A TOURISM AND RECREATIONAL DEVELOPMENT IS BEING PROPOSED, PLEASE SEE REVERSE FOR FURTHER INFORMATION.

ARE YOU AN EMPLOYEE OF THE GOVERNMENT OF ALBERTA OR MEMBER OF THE LEGISLATIVE ASSEMBLY? ☐ YES ☒ NO
DEPT.
POSITION

HAVE YOU ATTAINED THE AGE OF 18 YEARS? ☒ YES ☐ NO
ARE YOU A CANADIAN CITIZEN OR LANDED IMMIGRANT? ☒ YES ☐ NO

SIGNATURE
PRINT NAME Rockal Day
DATE Jul. 19, 1999
$
AMOUNT ENCLOSED (NON-REFUNDABLE)

FOR OFFICE USE ONLY

Authorization is hereby granted to enter upon and occupy the public land as described on this application and as shown on the attached sketch subject to the attached conditions.

Date
For Minister of Environment

CLIENT I.D. NUMBER:
ATTACHED PLAN/SKETCH? ☒ YES ☐ NO MYLAR ☐ YES ☐ NO

TECHNICAL SERVICES BRANCH
CONFLICTIONS? ☐ YES ☐ NO

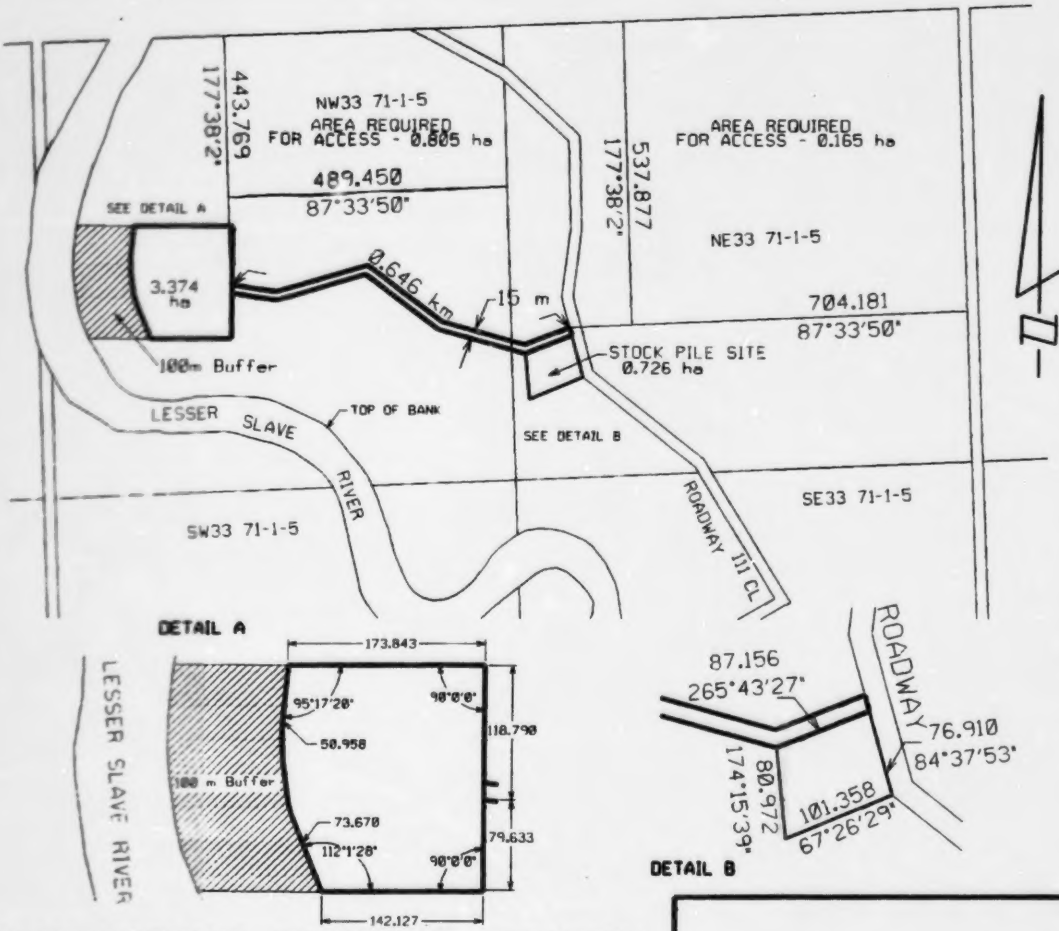
FILE RECORDS

LSAS

INCOMPLETE APPLICATIONS MAY BE RETURNED TO THE APPLICANT WITHOUT BEING PROCESSED. APPLICATION FEE MUST BE SUBMITTED WITH THE APPLICATION.

Application Plan

TOWNSHIP 71 , RANGE 1 , WEST 5 MERIDIAN


NW33 71-1-5
AREA REQUIRED FOR ACCESS - 0.805 ha
AREA REQUIRED FOR ACCESS - 0.165 ha
443.769
177°38'2"
537.877
177°38'2"
489.450
87°33'50"
SEE DETAIL A
NE33 71-1-5
3.374 ha
0.646 km
15 m
704.181
87°33'50"
STOCK PILE SITE 0.726 ha
100m Buffer
LESSER SLAVE RIVER
TOP OF BANK
SEE DETAIL B
ROADWAY 111 CL
SE33 71-1-5
SW33 71-1-5
N
DETAIL A
173.843
95°17'20"
90°0'0"
50.958
118.790
100 m Buffer
73.670
112°1'28"
90°0'0"
79.633
142.127
LESSER SLAVE RIVER
87.156
265°43'27"
ROADWAY
76.910
84°37'53"
80.972
174°15'39"
101.358
67°26'29"
DETAIL B

PLAN SHOWING PROPOSED LOCATION OF SURFACE MATERIAL LEASE, ACCESS ROAD & STORAGE SITE

TSB STAMP AREA

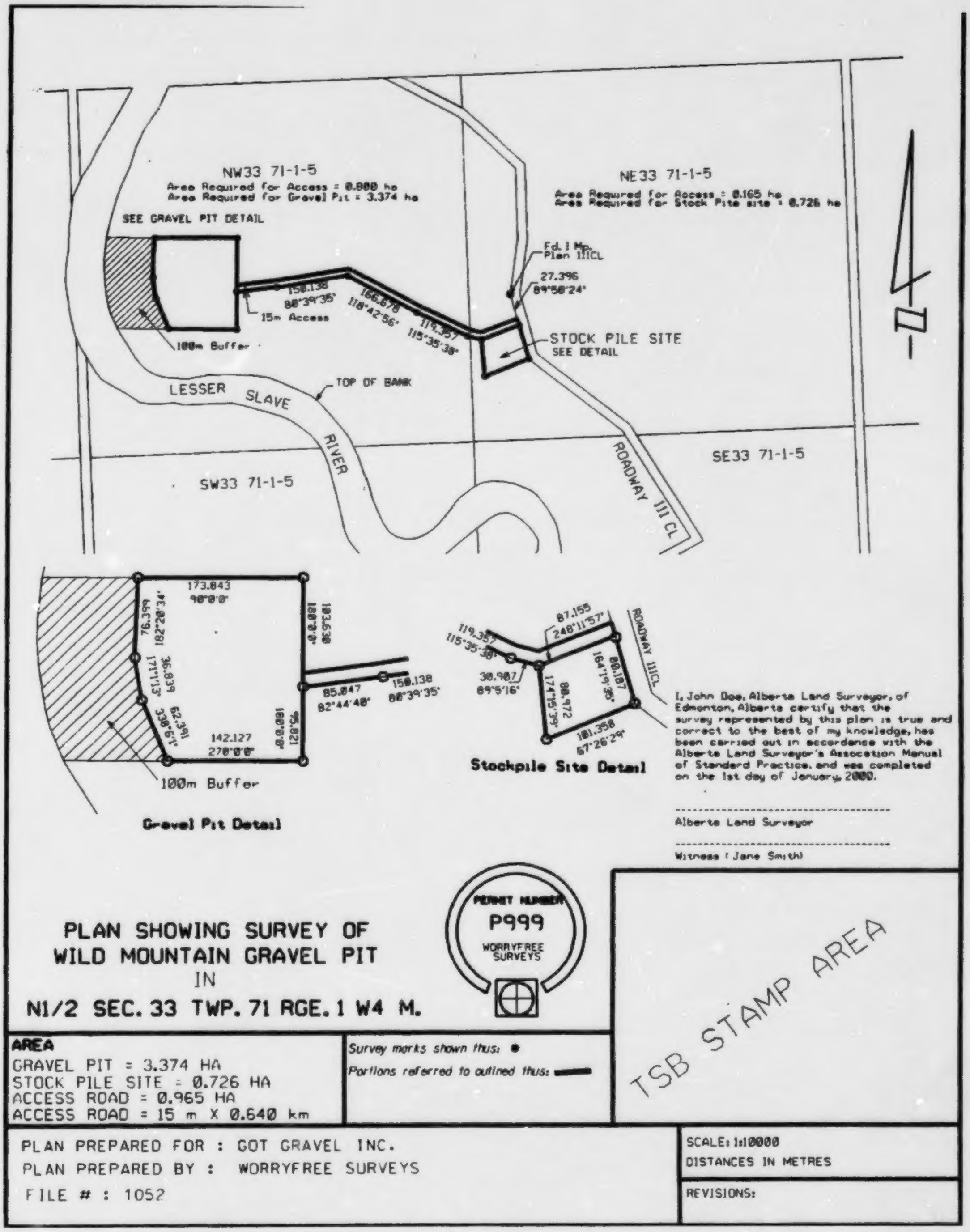
AREA OF LEASE SITE - 3.374 HA
AREA OF STORAGE SITE = 0.726 HA
TOTAL AREA OF ACCESS ROAD = 0.970 HA

PLAN PREPARED FOR : GOT GRAVEL INC.
PLAN PREPARED BY : JOHN SMITH
FILE # : 1052

SCALE: 1:10000
DISTANCES IN METRES

REVISIONS:

Survey Plan Example (See Section 3.1)



NW33 71-1-5
Area Required for Access = 0.000 ha
Area Required for Gravel Pit = 3.374 ha
SEE GRAVEL PIT DETAIL
150.138
80°39'35"
15m Access
166.678
118°42'56"
119.357
115°35'38"
100m Buffer
NE33 71-1-5
Area Required for Access = 0.165 ha
Area Required for Stock Pile site = 0.726 ha
Fd. I Mp.
Plan 111CL
27.396
89°50'24"
STOCK PILE SITE
SEE DETAIL
TOP OF BANK
LESSER SLAVE RIVER
ROADWAY 111 CL
SE33 71-1-5
SW33 71-1-5
173.843
90°0'0"
76.399
182°20'34"
36.839
171°1'13"
62.391
330°6'1"
142.127
270°0'0"
103.630
180°0'0"
95.821
180°0'0"
85.047
82°44'40"
150.138
80°39'35"
100m Buffer
Gravel Pit Detail
119.357
115°35'38"
30.907
89°5'16"
87.155
248°11'57"
80.187
164°19'35"
80.972
174°15'39"
101.358
67°26'29"
ROADWAY 111CL
Stockpile Site Detail
PERMIT NUMBER
P999
WORRYFREE SURVEYS
TSB STAMP AREA

I, John Doe, Alberta Land Surveyor, of Edmonton, Alberta certify that the survey represented by this plan is true and correct to the best of my knowledge, has been carried out in accordance with the Alberta Land Surveyor's Assocation Manual of Standard Practice, and was completed on the 1st day of January, 2000.

Alberta Land Surveyor

Witness (Jane Smith)

PLAN SHOWING SURVEY OF
WILD MOUNTAIN GRAVEL PIT
IN
N1/2 SEC. 33 TWP. 71 RGE. 1 W4 M.

AREA
GRAVEL PIT = 3.374 HA
STOCK PILE SITE = 0.726 HA
ACCESS ROAD = 0.965 HA
ACCESS ROAD = 15 m X 0.640 km

Survey marks shown thus: ●
Portions referred to outlined thus: ▬

PLAN PREPARED FOR : GOT GRAVEL INC.
PLAN PREPARED BY : WORRYFREE SURVEYS
FILE # : 1052

SCALE: 1:10000
DISTANCES IN METRES

REVISIONS:

3.0 SURFACE MATERIAL EXTRACTION THROUGH LEASE APPROVAL

Once the lease has been issued the next step is to accurately locate, assess the site and plan the operation. Planning an extraction operation has been proven to be a cost-effective exercise. To plan effectively, an operator must possess some indication of the quantity of resource that is within the lease boundaries, and the general characteristics of the deposit. The information from the exploration process will aid the developer in making the correct decisions to obtain the most efficient extraction sequence.

Besides being invaluable for the operator, a conservation and reclamation plan is important for managing the land and the surface material resources. It may influence decisions involving operations in environmentally sensitive areas.

Reclamation requirements must be considered along with the development stages of the plan so that the cost and effort in carrying out reclamation can be minimized.

Conservation and reclamation plans must include a site analysis, site preparation description, pit activity description and the reclamation proposal.

On public land, a Conservation and Reclamation plan is required on all leases 5 acres or over and all leases, regardless of the lease size, within the 1 to 100 year flood plain of a watercourse or other environmentally sensitive areas.

3.1 Legal Responsibilities for Lease Boundaries

The physical lease boundaries must be exactly as they are described in the lease. Once the lease has been approved, the operator should ensure that the boundaries are well marked on the ground, for both his own information and that of others. Having the lease boundaries surveyed by an Alberta Land Surveyor once the lease has been approved is a requirement.

If an operator is not operating within his lease boundaries, then he is operating in trespass. If this should happen, the operator may expect to be penalized by AENV. If the operator is trespassing on another lease, civil action by the legal lease-holder can result.

3.2 Site Assessment

The site assessment is a key function identifying site specific operational parameters to which the operation is to be tailored to. The assessment will assist in determining development costs and will document the state of the land. Most environmental obstacles will be identified through the site assessment and adjusted for in the operational design. Such a procedure can alleviate costly process of correcting any environmental damage, a potential cost that justifies the cost of hiring a specialized consultant to do the assessment. The lessee has the option of operating with the stated conditions (buffers, timing restrictions, etc.) or hiring a qualified professional to configure a site-specific operation with less restrictive operational parameters. The qualified professional will have to determine the objectives of the conditions and provide detail on how the design will meet the objectives (e.g. a 100m buffer to ensure slope stabilization may be eliminated if a geotechnical study verifies the stability concern is not a factor).

The site assessment is to take into consideration the following parameters:

- resource demand,
- existing land uses,
- existing disturbances,
- topography,
- vegetation types over development areas,
- soil,
- geology,
- hydrogeology,
- wildlife,
- historical resources,
- access,
- other interest holders

Refer to Section 5.1 for the details related to each parameter.

3.3 Factors Limiting the Development of an Area

It might be found that only part of the area containing surface material could be developed. This could be caused by economic or environmental limitations.

3.3.1 Economic Limitations to Development

Sometimes, certain costs incurred in operating on a particular site will impose economic limitations on any surface material extraction. The following are examples of these costs.

Topsoil, Overburden and Reject Material Handling

Operational and reclamation costs can be reduced substantially by planning the placement of topsoil, overburden and reject material. Ongoing reclamation can eliminate the need to handle the material more than once. The lease size should allow extra area required for stockpiling and sloping the pit walls to the final reclamation grade.

Surface Material Extraction and Processing

If the gravel is to be washed, screened, crushed or stockpiled, the costs will increase with each of these steps.

Transportation to Customers

The distance surface material is hauled to customers can have a significant effect on the economics of an extraction operation. It is wise to establish the location of prospective customers before making an application for a specific site.

Royalties

Royalty fees are payable. Measures to keep track of accurate volumes that are removed from the lease site are the responsibility of the operator. For leases that large volumes are being removed form the site, scales are recommended. See "Fees and Costs" in back pocket.

After considering all these costs and assessing the potential for profit, it may become apparent that the costs will exceed the value of the gravel, and the operator may decide not to develop the site.

3.3.2 Environmental Limitations to Developing Surface Material Deposits

Upon examining a site, an operator may learn that certain characteristics of the site will present obstacles to operating a pit. It is important to assess all interests or natural resources that may be affected by an extraction operation. In the referral process, some obstacles may be addressed by the imposition of certain operating conditions that must be part of the conservation and reclamation plan. The following are some examples.

- When field-testing, an operator is asked to note the water table. If he plans to remove gravel from below the water table, he may have to consider pumping the water out of the operating area, if possible. During reclamation, proper drainage of the pit area must be considered.
- When viewing the site, an operator should note any potential pit areas that may be considered to be too close to pipelines, roads, rivers, embankments, recreation areas, etc. for which it may be necessary to leave a buffer of trees or undisturbed land.
- Any signs of wildlife on the test area should be noted. Some wildlife species and habitat considered to be sensitive and will need to be considered in the approval and design of pit development. For example, the maximum sight line distances of 200 m restriction (maximum of 4 ha open at any one time) will affect the development sequencing of an operation.
- Stockpiling or crushing on lease may be restricted due to wildlife concerns.

To address environmental limitations properly, the conservation and reclamation plan must cover the existing interests and resources that are included in Subsection 5.3.1 Site Analysis.

3.4 Identifying the Working Areas

When designing the extraction sequence, the items listed below must be taken into consideration.

3.4.1 Access Roads

Access to or through a pit may change as the pit is developed. Changes should be kept to a minimum to avoid unnecessary costs.

Road-Use Agreement

Often, the access road required to reach the intended location already exists, and the applicant may be required to obtain approval to use it, even if this means using only a small portion of the road. For example, a road owned by someone else cannot be used without obtaining an agreement from the owner.

All commercial users of Licences of Occupation are expected to pay a fair rate for maintenance and usage. AENV does not become involved in road use agreement negotiations. If an agreement cannot be reached between the two parties, an appeal may be made to the Director of the Land Administration Division, Land and Forest Service to resolve the situation. Appeals must be made in writing and be addressed to the Director.

3.4.2 Timber Salvage and Woody Debris Disposal

Section 150 of the **Timber Management Regulations** of the **Forest Act** states "an industrial operator shall, within 60 days of clearing land, remove therefrom the decked timber and put it to some beneficial use or dispose of it by sale or gift." However, a condition of the lease may **require** the applicant to salvage the timber. There are many salvage contractors in Alberta, as well as many potential users for the wood. Considering the wood can be used for posts, poles, lumber, pulp, firewood and other purposes, the operator should determine whether any parties are interested in the timber rather than destroying it, even though AENV may not require timber salvaging. By doing this, the operator can gain additional revenue and also make it easier to carry out gravel extraction operations.

By contacting the nearest departmental office, the applicant may learn the names of local timber-salvage contractors. Salvaged timber can be stored for only a short time. After 60 days, the operator may lose ownership of the timber, and AENV may award it to someone else. Timber will generally lose its principal value after two years. The operator should make certain that any unsold timber is sorted and placed where it need not be moved for up to two years.

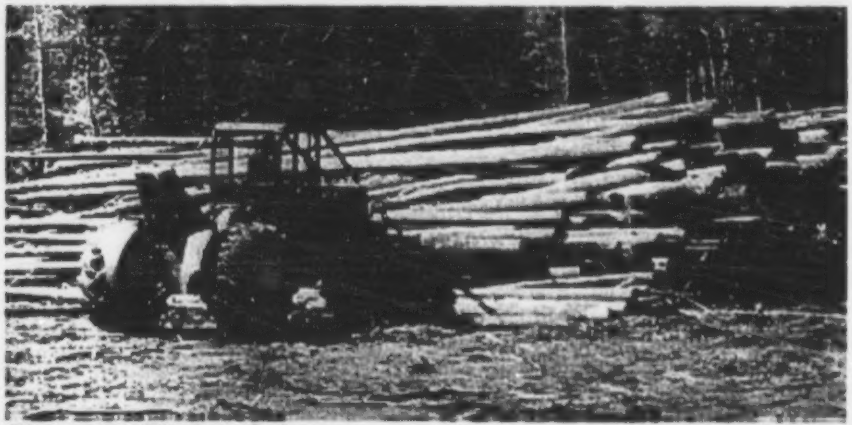


Figure 3: Timber Salvage

It is necessary to obtain a fire permit during the fire season, which is generally between April 1 and October 31. Occasionally, these dates will change. Outside this period, brush piles can be burned without a permit. During either period, brush piles should be burned only when it is safe to do so. In addition to being a fire hazard, brush is an obstacle that the operator must work around, as well as being a safety hazard and a nuisance. An operator may be held responsible for the fire suppression costs if the source of the fire is linked to the lease operations.

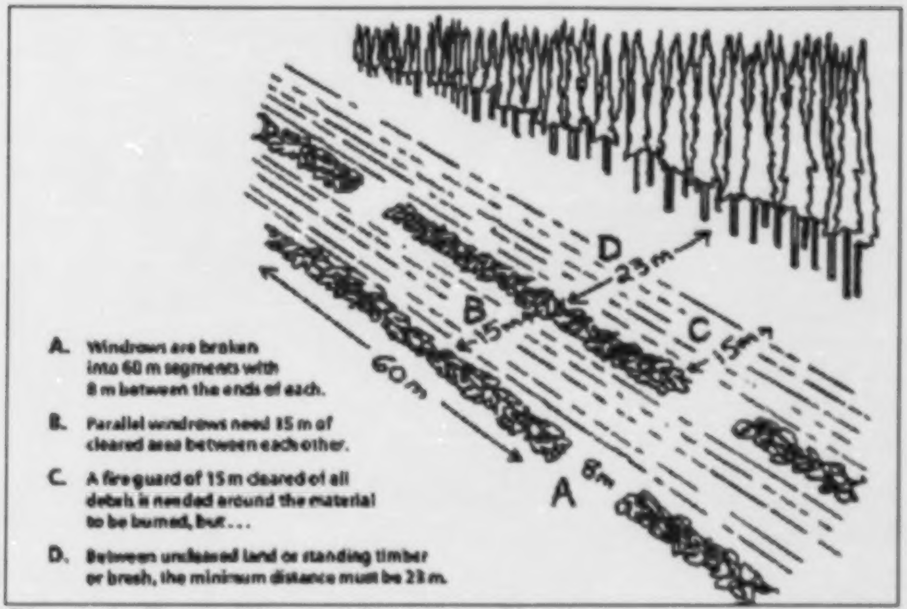

D
23m
B
15
C
15m
60m
8m
A
A. Windrows are broken into 60 m segments with 8 m between the ends of each.
B. Parallel windrows need 15 m of cleared area between each other.
C. A fireguard of 15 m cleared of all debris is needed around the material to be burned, but . . .
D. Between uncleared land or standing timber or brush, the minimum distance must be 23 m.

Figure 4: Brush Disposal for Lease Clearing

3.4.3 Topsoil, Overburden and Reject Piles

It is cost effective to prepare a plan for handling topsoil, overburden and reject or spoil material from the beginning of any operation on the site until reclamation certification occurs. These three types of material will be handled when extraction operations begin, and again during the reclamation phase. The plan should describe the step-by-step handling of these materials. The conservation and reclamation plan should show the location of each stockpile and the sequence of its placement.

Topsoil is the thin layer of soil covering the ground that is necessary for plant growth. It is generally considered to be irreplaceable. If topsoil is contaminated with sand, clay and other materials, plant growth may be hindered. Therefore, topsoil should be piled in a safe place away from activities on the site, where it cannot wash into ditches or be mixed with waste materials. Weed control is essential to avoid future contamination. Topsoil stockpiles should be seeded with suitable species if they are to remain in place for more than one growing season.

Overburden is the material found between the topsoil and the sought after surface material. Ideally, it will not be a deep layer, because that would increase operating costs. Overburden will be replaced in the pit after operations have been completed, and used to recontour the site. It should be stored on land that has been stripped of topsoil, **not** over merchantable surface material. Since the initial removal of overburden may have to be piled for an extended period, it should be located where it is beyond any operational area. Once the next development stage is reached overburden can then be placed into depleted pit areas to achieve the contour grade for reclamation. Pit development and reclamation thus becomes a sequential process minimizing the reclamation liability.

Reject piles resulting from a crushing or washing process should be factored into the development and reclamation sequencing. Consideration of possible future uses should determine how best to handle these materials. For example, oversized material (boulders) that cannot be processed by the crusher may be of value for riprap material at some future date. Piles of this material may be left accessible up to the reclamation stage, and then be buried at a location which is indicated on the final reclamation plan for possible future use.

3.4.4 Gravel Stockpiles

The stripped surface of the stockpile site should be smoothed and properly sloped to make a firm, well-drained base. Drainage should be provided to prevent ponding and blockage of surface run-off. For large pit-run stockpiles, significant mixing with the ground beneath the pile may occur.

Where practical, covering the stockpile base with a layer of waste sand or reject material is one way to minimize possible contamination of stockpiled materials and base material.

Areas should be identified where significant onsite and offsite drainage and erosion control methods are needed. Examples would include drainage ditches and berms.

Stockpiles should be oriented so they do not create safety hazards for traffic, such as blind corners or dangerous access.

Stockpiles should not be constructed near road allowances, lease boundaries or utility rights of way where possible slumping would cause personal injury or property damage.

When stockpiles are to be constructed in active pits, it is important to construct them in areas that have been depleted, where practical.

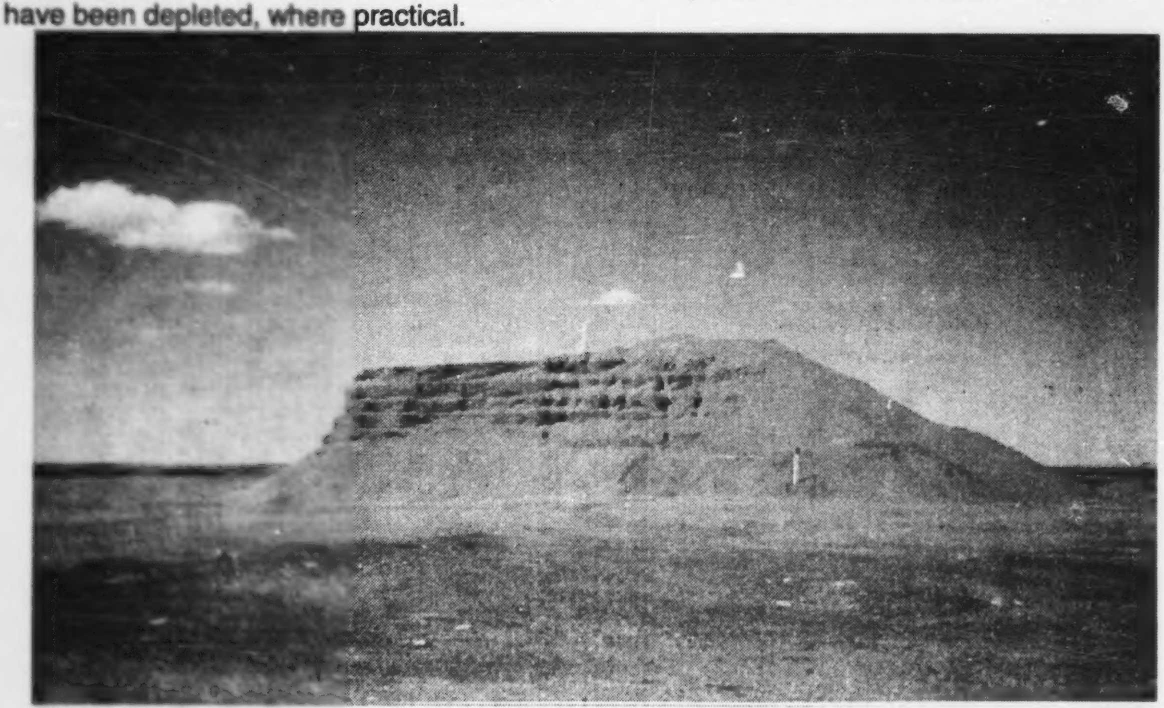


Figure 5: Stockpile

3.4.5 Imported Materials

Materials brought to the site such as salt for mixing with the sand for winter road de-icing, or oil for asphalt production are to be stored in such a manner that no contamination of the site occurs.

The burial of asphalt reject material must be done in a manner that is acceptable to the regional field officer.

All material that is imported to the site must be identified in the plan or permission must be obtained from the field officer in writing to handle such material. Equipment storage needs must also be identified in the plan.

3.4.6 Crushing and Weighing Sites

Operations that involve crushing and weighing create special problems that must be addressed An efficient traffic pattern should be planned to and from the crushing and weighing equipment so workers do not obstruct or delay each other. It is easier to develop this on paper than to move equipment on the ground or amend a development plan. Crushers and weigh scales will require the operator to consider the intended location of the following:

- area for stripping and other overburden piles;
- area for pit run piles;
- crushed aggregate piles;
- rejected material pile;
- blending material;
- leftover stockpiles;
- mixing plant site;
- mobile pads; and
- buffer zones between property lines and/or drainage courses.

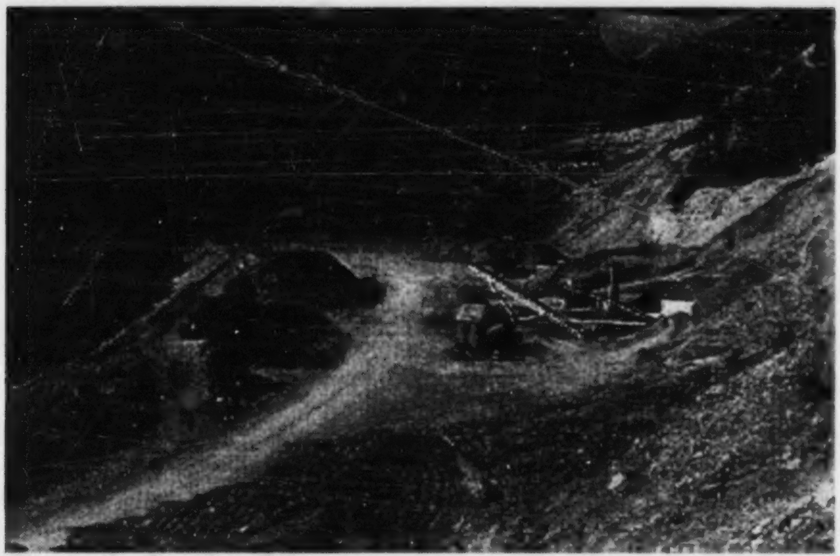


Figure 6: Crusher Site

Figure 7: Weighing Station (Poplar Creek Gravel Pit near Ft. McMurray)

3.4.7 Washing Operations

In addition to special permits from AENV, Water Management Division and Land and Forest Services, the operator will have to indicate the intended water source, the location of a settling pond for used water, and a plan for releasing used water.

While gravel will not hold water, water can be retained on a site lined with clay or in a clay deposit. A pit used for washing, where the water is often recycled, is different from a settling pond, where water is allowed to seep into the ground.

3.4.8 Weed Control

The operator is responsible to control any weeds that establish themselves as a result of the operation. Any chemical control methods must be approved by the field officer.

3.4.9 Buffer Zones

It is likely that buffer zones of various widths will be required. These zones, which are barriers of undisturbed vegetation, are left in place for the following reasons:

- **Aesthetics** - a buffer will help to conceal an unsightly operation;
- **Noise** - undisturbed vegetation helps reduce noise created by gravel operations;
- **Erosion control** - vegetation helps to anchor soil and slow down erosion caused by wind and water;
- **Wildlife corridors** - in areas travelled by wildlife, a buffer will allow animals to continue moving from one area to another without being exposed;
- **Sight** - without a buffer, large areas used by wildlife are easily visible from the work area, making it hazardous for wildlife, especially during hunting season; and
- **Safety** - roads, communities or other operations may need a safety margin.
- **Siltation** – Vegetation helps filter surface runoff and prevents silt from entering watercourses and waterbodies thereby helps to protect fish habitat.
- **Watercourse migration** – a vegetated buffer will reduce the potential for a watercourse to shift into an extraction area.

Buffer zones will vary in width depending on their purpose, the existence, age and type of trees present, the density of the timber making up the buffer, the slope of the landscape, and the proximity of roads, water bodies, communities, other operations, etc. If any of these factors is encountered, buffer zones will be required.

If a buffer width has been stated in the conditions of operation (Schedule B), the buffer width can be reduced if the objective of the buffer is maintained. Rationale for the reduced buffer size must be justified in the Conservation and Reclamation Plan (e.g., the buffer to prevent siltation into a river or maintain the present river channel can be assessed by a river engineer to prescribe the proper buffer parameters).

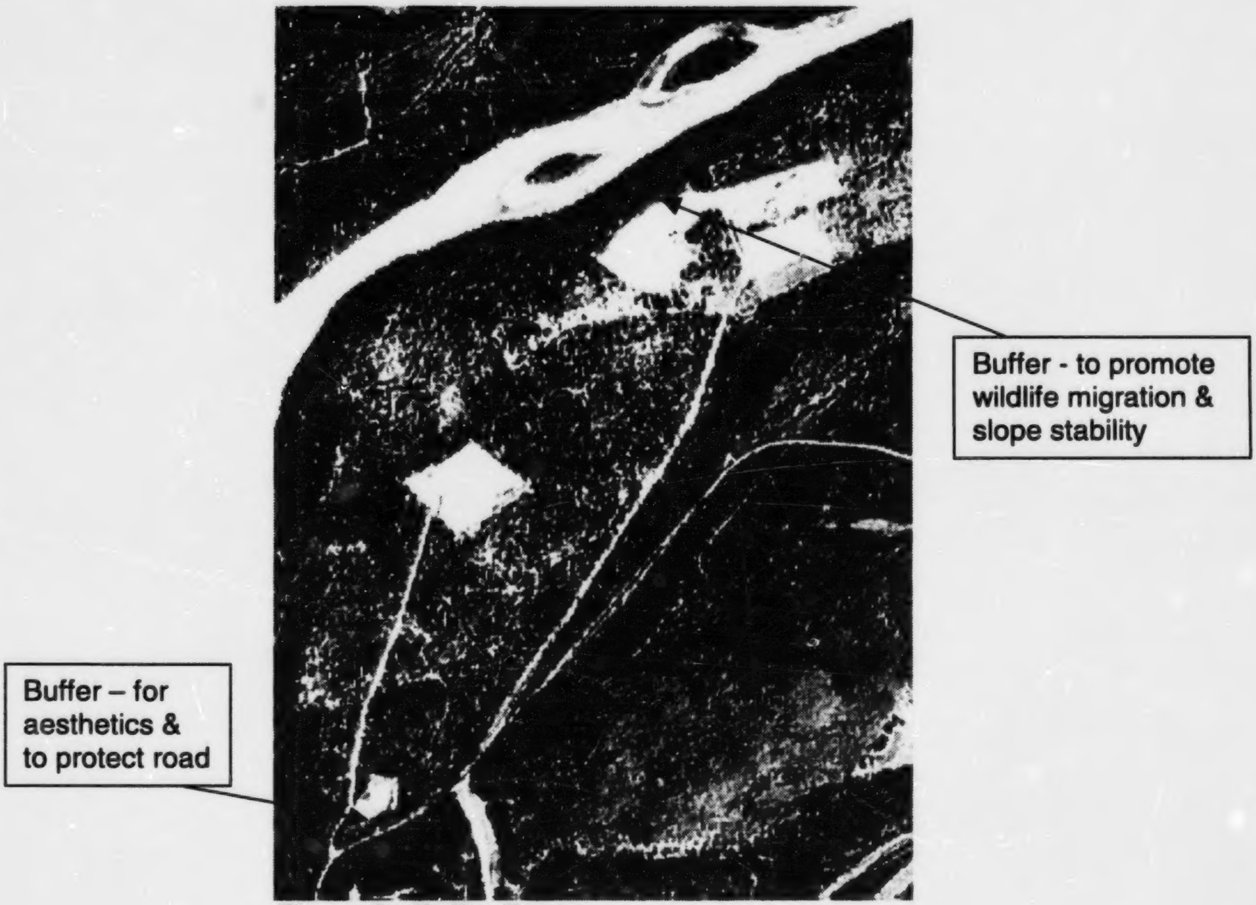

Buffer - to promote wildlife migration & slope stability
Buffer – for aesthetics & to protect road

Figure 8: Buffer Zones

3.4.10 Improvements

Fencing, gating, placement of storage tanks or construction on lease of any type requires approval. "Improvements" such as these can be identified in the application stage to be included in the approval. If the "improvement" is required after the approval has been issued, the field officer can add the requirement through written consent.

Permanent buildings and structures will need a separate authority.

3.4.11 Water Bodies and Drainage

Many surface materials have been carried and deposited by water, therefore many deposits are often found close to rivers and lakes. Underground springs and above-ground runoff from rain or snow also may affect extraction operations. If the operator suspects that water will affect the operation in any way, methods for controlling it should be included in the development plan. All ditching, berms, settlement ponds, buffers and other control methods are to be shown on the plan.

Operations that may cause harmful alteration, disruption or destruction of fish habitat will require authorization under the Federal **Fisheries Act**. Operators should consult Fisheries and Oceans to ensure that the proposed operations comply with the requirements of the **Fisheries Act**. The 1998 publication entitled ***Decision Framework for the Determination and Authorization of Harmful Alteration, Disruption or Destruction of Fish Habitat*** by Fisheries and Oceans Canada outlines the process to determine if an approval is required.

3.4.12 Lease Control Markers

To monitor the development of the lease, control markers should be established and protected from being disturbed. The lease corners and boundaries are to be marked along with any points that will allow convenient lease development tie-ins.

Progressive Reclamation

To achieve progressive reclamation, the sequencing of pit development has to be planned to free resource depleted areas of continued activities (i.e. start extraction operations at the opposite end of the lease related to the access entrance).

3.5 Safety Concerns

Operators are urged to contact the Provincial department responsible for the Occupational Health and Safety Act for further information and advice on safety issues.

4.0 RECLAMATION

By law, as cited under the **Environmental Protection and Enhancement Act**, all land on which surface disturbance takes place must be reclaimed.

To achieve a satisfactory level of reclamation is not a simple matter. Usually, it means that before extraction begins, all the soil on which the existing vegetative cover is established must be removed. When extraction operations cease, this same soil is replaced on a landscaped surface in a manner that will support vegetative growth similar to the growth that was cleared.

The methods for removing the topsoil and overburden are critical for ensuring that the soil characteristics remain the same after the soil has been replaced. Since the organic layer is crucial for plant growth, care must be taken to prevent the overburden and topsoil layers from mixing when they are replaced. **It is essential to consider reclamation procedures at the development stage to prevent problems from arising at the reclamation stage.**

The extraction development can be an opportunity to create of new land use or conservation areas. Wildlife/fish habitat can be created, grazing/reforestation capabilities can be improved, recreational opportunities can be designed, etc. Any land use/conservation alterations should be discussed in principal with the local land use officers prior to any plan development. Refer to the "Users Guide to Pit and Quarry Reclamation in Alberta".

4.1 Acceptable Reclamation

The criteria that are used by a departmental officer to determine whether land reclamation has been carried out in a satisfactory manner is:

- Woody debris has been removed or handled as required

- The operator's equipment and facilities must be removed from the site, and all solid materials should either be removed or, when necessary, with approval, buried with a minimum of 1 metre of subsoil cover.

- The disturbed area is to be recontoured to establish acceptable final drainage patterns.

- Topsoil and root-zone material should be spread evenly over the entire area after the ground has settled sufficiently.

- The operation must attain a permanent, maintenance-free plant cover that is compatible with vegetation on adjacent, undisturbed lands.

- All perennial forage mixtures to be used for reseeding should be approved by a local departmental officer before they are obtained. It is important that the species chosen for the site be compatible with the soil conditions of the reclaimed site.

- The revegetation is free of noxious weeds.

- Erosion is not evident.

- The access roads are reclaimed.

- The end land use is to conform to the design as specified in the approved plan.

Reclamation responsibilities remain with the leaseholder until a Reclamation Certificate is obtained from the department.

Figure 9: Reclamation of a sandy soil site

GREEN AREA	**WHITE AREA**
Alberta Environment Land Administration Division 3rd Floor, 9915 – 108th Street Edmonton, Alberta T5K 2G8 Phone: (780) 427-3570 Fax: (780) 422-4251	Agriculture, Food and Rural Development Public Lands Management Branch 200 J.G. O'Donoghue Building 7000 – 113 Street Edmonton, Alberta T6H 5T6 Phone: (780) 427-6597 Fax: (780) 422-4244

REQUEST FOR RECLAMATION CERTIFICATE

Got Gravel Inc., P.O. Box 123, Anywhere, AB. (780) 555-4455
(Operator's Name, Address and Phone Number)

I, **Rockal Day** hereby apply for a reclamation certificate

for **SML 960099** on **NW 26 – 069-18-4**
(Lease/Licence/Reservation No.) **(Legal Description)**

as outlined in yellow in the attached plan. (Please complete a plan and attach).

☒ This application is my verification that:

- All improvements have been removed
- Brush disposal is complete
- Backsloping is complete
- Recontouring is complete
- Revegetation is complete (80% or greater revegetation)

and a fee of $300 is enclosed with this form (payable to the Provincial Treasurer).

OR

☐ This is my verification that no entry was made on these lands (fee not required).

(Clean-up Contractor's Name and Address)

The required reclamation was completed on **Aug. 1999** **(Date)** and I inspected this site on **Sept. 16,1999** **(Date)** and found all conditions to be in a satisfactory condition which should permit the issuing of a reclamation certificate.

I understand that if the department finds the reclamation satisfactory, and if the operator is not indebted to the department, the security deposit will be refunded.

Dec 2, 1999
(Date)

Rockal Day
Signature of Applicant

The information requested on this form will be used to authorize use of public land. This information is requested in accordance with the Public Lands Act and is protected by the provisions of the Freedom of Information and Protection of Privacy Act. For further information, contact the Land Administration Division at (780) 427-3570.

5.0 PREPARING THE CONSERVATION AND RECLAMATION PLAN

After a lease has been authorized, a Conservation and Reclamation Plan must be submitted and approved. The applicant or a qualified professional must prepare a plan that outlines the intended operation and includes the site assessment, operating and reclamation information (Form B1), a plan and appropriate cross-sectional drawings. The required information, as described in the following section, must be provided **(9 copies of the plan to be submitted)** and approved before any removal of surface materials may begin.

The Conservation and Reclamation Plan must identify and justify the need for the amount of surface material resources that are contained within the lease boundaries.

The plan will also describe the reclamation sequencing and method to be used to achieve progressive reclamation and provide an illustration of the reclaimed site upon exhaustion of the surface material resource. Future uses for the land can be proposed to support, for example, forestry, grazing, wildlife, recreation, or an industrial site.

5.1 Form B1 Information

(Refer to Appendixes for a sample and glossary for context of the terms used)

Site Analysis

1. **Resource Demand** – identify the surface material type/s required and the proposed end use of the material.

2. **Existing Land Use** – indicate all land uses that occur within the site area. Ground evidence may help evaluate use (e.g. evidence of camping, use by livestock, off road vehicle tracks). Local residents may be able to provide important historical information associated with the site that can alter the operating requirements of the purposed resource extraction (e.g. burial of human remains or garbage, access uses). It is cost effective to identify and design operations to mitigate any potential conflicts or capitalize on possible opportunities in the planning stage. As an example reclamation costs may be reduced by incorporating traditional uses such off-road vehicle recreation by leaving overburden stockpiles for the trail riders.

3. **Existing Disturbances** – a lessee assumes all reclamation liability associated with previous activities. The lessee is also held accountable to all surface material removed from the site, therefore it is advisable to determine any volumes of material that has left the site. **Identification** of all human made alterations is an advisable procedure to document the reclamation liability and/or any previous surface material resource depletion. Documentation of the site's disturbances can be addressed under this area.

   The information is best obtained through air photos and a ground inspection. The most recent airphotography, which can be used as the base map for the site plan, may be used to compare the state of the site and any differences documented on the plan.

   - Disturbances include any alteration of the original surface and it's cover.

- Vegetation, topsoil, overburden stripping can be quantified through ground or airphoto measurement procedures. Identification of volumes removed by previous extraction operations will justify volume removal discrepancies if a volumetric survey is conducted at a later date. The quantification of volumes of surface materials removed from the site can be made through measuring the pit and stockpiles or through a topographic survey that could be run in conjunction with the lease boundary survey. If the site was previously held under a Surface Material lease or licence, returns reporting volume removal submitted by the lessee can be requested from Alberta Environment

- Report any structure or other human-made alteration

- The latest air photography is available at Air Photo Services, Alberta Environment, Edmonton.

All these disturbance areas should be documented on the site plan with the corresponding item identification and area figures.

4. **Topography** – Check the boxes of all the Canadian Land Index (CLI) classes that are contained within **the** site. More information on Canada Land Inventory can be found @ website address: http://geogratis.cgdi.gc.ca/CLI/Frames.html

   The National Topographic System maps of 1:50,000 scale provides elevation information that can be used for site topography. For producing the cross section profiles, a hand level survey can obtain elevation information with acceptable sufficient accuracy.

   The upland, flood plain and waterbody areas can be approximated from airphotography.

5. **Vegetation types** – this information indicates the productivity of the underlying soils, therefore provides important baseline information for reclamation expectations. Plant communities **within** the lease boundaries can be mapped through field evaluation along with the aid of airphotography, Alberta Vegetation Inventory or Forest Cover maps. Approximate areas of each mapped unit are to be provided in the appropriate category.

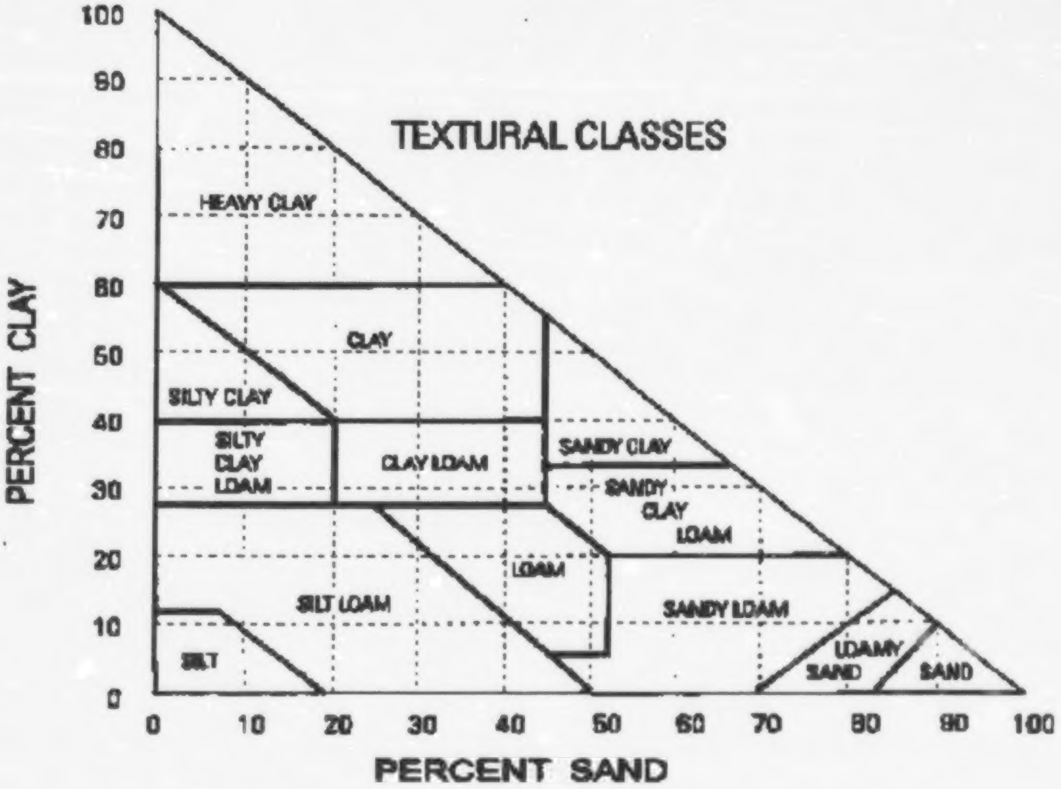
   Weed Designation Regulation of the Weed Control Act lists the weeds that can be problematic and may require control.

6. **Soil** – this information, which is critical for designing reclamation parameters, can be obtained along with the subsurface **testing**. To obtain equal land vegetation productivity, a requirement for reclamation certification, reconstruction of the soil profile to the original conditions will promote equitable results. If a site contains variations of soil types, their area coverage (location) is to be indicated on the site plan.

   The soil profile can be obtained through a soil probe or observed in conjunction with exploration testing. The soil profiles provide the information to determine salvage depths.

   If A horizon (s) are <15 cm, then a minimum of 15 cm of material will be salvaged unless the material is unsuitable (e.g. Bnt, bedrock, gravel). In areas of cultivated land, very deep soils are to be salvaged to a maximum depth of 70 cm. In forested areas salvage the duff (LHF) and up to 15 cm of material.

The soil texture description is to follow the Canadian System of Soil Classification as follows:



Textural classes based on proportions of sand, silt, and clay sized mineral particles.
% Silt = 100% – (% Sand + % Clay)

Figure 10:

The percentage of stone contained in the topsoil and subsoil is an estimation to give some indication of the original rock content for comparison to the reclaimed soil profile. The gravel content of the reclaimed soil profile should not exceed a 10% increase.

7. **Geology** – the subsurface assessment is normally accomplished through auger drilling, backhoe digging or both. When **the** deposit is at a greater depth than the limit of the backhoe, the auger is used to determine the lowest extraction limit.

This information provides the justification of leasing the land for extraction purposes. It also helps determine if the material is a surface material requiring approval under the Public Lands Act (public lands) or the Environmental Protection and Enhancement Act (land not administered under the Public Lands Act) versus an industrial mineral requiring an approval under the Mines and Mineral Act.

Surficial Geology maps are available through the Alberta Geological Survey. Availability and ordering the maps can be obtained through their publications website @ http://www.ags.gov.ab.ca/AGS_PUB/PUB_INDEX.HTP or contacting them at 780-422-3767.

The composition and quantity information allows the inventory of the deposit type and resource availability.

8. **Hydrogeology** – the surface water parameters can be determined by a topographic and climatic evaluations while the ground water assessment can be facilitated by the subsurface testing and/or adjacent pit **evaluations**. This information will determine any water management requirements and trigger an approval under the Water Act if required. A completed Part C – Application for Water Approval form (see Appendix III) is to be submitted with the plan if water is to be diverted or used.

9. **Wildlife** - indicate any evidence of wildlife use of the lease area such as game species or their signs (e.g. include tracks, droppings, nests, browsed trees/shrubs, etc.), other wildlife species and their sign, and significant habitat features (e.g. mineral licks, high vegetation diversity, high browse availability, wildlife trees (large live trees and snags with cavities), marshes and ponds, etc.).

10. **Historical Resources** – indicate if there is any evidence of old artefacts or indications of historical resources (teepee rings, arrowheads, etc.). If a Historical Resources Impact Assessment was conducted a copy **of** the assessment approval is to be included.

11. **Other Interest Holders** - "Schedule B" of the public lands lease agreement document lists other land uses that may affect the extraction development procedures. The interests identified by the Schedule relate only to those interests that have a similar land description as the Surface Material approval. In addition, all adjacent interests are to be identified to ensure all prior land uses are taken into account by the proposed development. The land uses could be pipelines, power lines, roads, other pit operations, recreation activities, etc. The location of these is to be noted on the Conservation and Reclamation Plan (a graphical plan of the other interests or copies of separate survey plans can be purchased from IHS Energy Canada Ltd. at (780) 413-3380 in Edmonton @ http://www.ihsenergy.ab.ca/.

Site Preparation

12. **Protection Measures for Other Interest Holders** – different interests within the area may require **protective** measures or agreements to establish acceptable operating parameters. This information helps to indicate the types of agreements that may be required to prior to any development.

"Encroachment agreements" can be obtained from pipeline or power companies to enter into their right of ways and extract material. The Pipeline Regulations stipulate the requirements of ground disturbance operations adjacent to pipeline rights of way. In some cases it may be economical to relocate a power line or pipeline.

To achieve conflict free operations to remove material up to a lease boundary common to another extraction operation, it is advisable to enter into an agreement, with the adjoining operator, outlining how the extraction will take place.

Any buffer requirements stipulated in the Conditions - "Schedule A' of the lease document are to be reflected here.

13. **Lease Boundary & Development Identification** - the lease boundaries must be located and marked on the ground. This ensures that the occupied lands are consistent with the legal description of the **lease**, as specified in "Appendix A" of the lease agreement. A survey carried out or endorsed by an Alberta Land Surveyor is required. This ensures the operation is as described and will not encroach on other interests.

    Control points are permanent reference markers to be used to measure all development parameters (area cleared of vegetation, topsoil stripping area, overburden stripping, pit size, reclaimed area).

14. **Security Deposit Assessment** - identify all the surface area that has been disturbed and will disturbed by the next development phase. This includes roads, stockpile sites, pit development, site **clearing** within the lease area. This area will be used to calculate the security deposit required.

15. **Timber and Woody Debris Disposal** – "Schedule A" of the lease document will stipulate the **conditions** of timber salvage and disposal of woody debris. The area cleared covered by salvageable timber is reported here along with the area of unsalvageable vegetation cleared.

16. **Topsoil, Subsoil and Overburden Stripping** – the area and volume of the topsoil, subsoil and overburden that will be stripped in the first phase of operation are to be reported here.

17. **Improvements** – all structures are to be approved prior to their construction. Any such **development** should be discussed with the land manager to establish the possibility of the development and any associated expectations.

Resource Extraction Activities

18. **Associated Activities** – indicate any activities associated with aggregate processing that will take place on the site. Show the locations of the activities on site plan.

19. **Maximum Depth** for Excavations – indicate the anticipated maximum depth of the pit. This is the depth from the original surface to the deepest extraction depth prior to any infilling.

20. **Extraction Sequencing** – indicate the number of phases that is expected over the life of the operation. The phases are to match the division of the lease into operational areas which indicate their order of development (to be shown on the site plan), the proposed yearly volumes and the life expectancy of the deposit.

21. **Erosion Prevention Techniques** – pit development exposes land to the erosional forces which could lead to adverse environmental impacts (e.g. siltation of waterbodies). Indicate if any measures are to be **employed** to address the potential erosion problems (erosion which affects other interests).

22. **Weed Control** – as in Item 21 new land exposures are subject to new conditions. Weeds can invade new land exposures that in turn leave the site when weed seeds contaminate the materials that are transported to other destinations. This item is to make the operator aware of the obligation to monitor and control the potential problem.

Reclamation

23. **Progressive Reclamation** – most leases are conditional to progressive reclamation. The cost-effective practice has many other benefits including less public resistance to such an operation. Progressive reclamation is accomplished through simultaneous development and reclamation **operations. This requires a well-planned materials handling operation based on a detailed subsurface evaluation. The site plan is to show the reclamation sequencing by indicating the** areas (vegetated to standard) and anticipated completion dates. The configuration of the reclamation areas will likely coincide with the areas designated under the extraction sequencing.

24. **Proposed Land Use** – the best land use options are determined in consultation with the landowner or land and resource managers. Increased value can be achieved through determining local/regional needs. Enhanced fish and wildlife habitat to subdivision development are examples of options that aid the approval of such an activity. The publication "A User Guide to Pits and Quarries Reclamation in Alberta" is a good reference to land use options.

25. **Reclaimed** Topography – this information is to evaluate the anticipated final reclamation grade in **comparison** to the original surface and the proposed land use. See Item 4.

26. **Average Depth of** Topsoil – this figure is to be based on the depth of topsoil required to regenerate vegetation.

27. **Average Depth of Subsoil** – this figure is also to be based on the depth of subsoil required to **promote** topsoil sustainability and regeneration of vegetation.

28. **Maximum Overburden Depth** – replaced overburden depths maybe highly variable to achieve required reclamation grade. The information will indicate the potential level of subsidence.

29. **Revegetation** – the determination of the plant succession is to coincide with the proposed land **use** and expectations of the land occupant or land and resource managers. Describe the reclamation seed mixtures agreed to.

30. **Reclamation** Details - details on fertilization rates, soil preparations such as ripping, **cultivating**, pH balancing, weed control measures during the revegetation period can be provided here.

31. **Site Sequencing Development/Reclamation Plans** – the plans will allow a visual presentation of the **site** characteristics and a conceptual picture as a reclaimed landscape once the surface material has been removed.

Qualified Professionals

Employment of qualified professionals in the assessment and design of the operation, promotes environmental compliance. Reports or plans under the signature of a qualified professional, hold that person accountable for the design of the operation with respect to environmental impact. Indicating the name or names of the qualified professional/s in the space provided, conform with the environmental Codes of Practice.

5.2 Plan Drawing Requirements

The plan should show each phase of pit development, as viewed from above the proposed operation. Plan drawings are acceptable in metric or imperial measure, provided they are consistent throughout.

Information Requirements

At a minimum, the plan drawing must show the information listed below.

- Lease boundaries (**scaled and matching the dimensions of the approved boundaries**)
- Township grid (section lines, road allowances)
- Location of existing pit(s)
- Access roads
- Adjoining or adjacent interests (within 100 m of lease boundaries) such as highways, power lines and pipeline rights of way or other extraction sites
- Identification of existing land uses for the area to be developed and identification of adjacent land uses, e.g., forest or pasture
- All rivers, streams, ponds, sloughs, topographic features and buildings within approximately 600 feet (200 metres) of the lease area
- The location of buffer zones
- Existing vegetation, e.g., treed, native or tame grasses and forage
- Area that has been cleared of vegetation
- Area that will be cleared of vegetation for the next development phase
- Area that has been stripped of topsoil
- Area that will be cleared of topsoil for the next development phase
- Area that has been stripped of overburden
- Area that will be cleared of overburden for the next development phase
- Location of any improvements (human made structures such as gates, fencing, etc.)

- The location of existing and future topsoil and overburden stockpiles (next Phase), and existing surface material resource stockpiles
- The total area that requires reclamation security (includes all disturbances - existing and next development phase)
- The general location of all processing facilities such as crusher, washing sites and ponds, asphalt plant
- The location of cross-sectional lines, e.g., A-A^1, B-B^1
- The development sequence of the operation of the lease
- The location of any concentration of reject materials that may have been buried, e.g., large boulders
- The anticipated development phase areas numbered to follow sequencing
- The estimated volume of gravel in each development area (show on site plan)
- The proposed land use after the site is reclaimed and reasons for this choice
- The reclamation sequence and anticipated timing (in reference to development phases)
- The bank location of any created waterbodies (separate plan if necessary)
- The direction of drainage on the reclaimed land
- Title block information and legend as shown on Drawing 1 (see pocket).

5.3 Cross-Sectional Drawings

Cross-sectional drawings show the pit and adjacent areas in profile, as though a section has been cut away. These drawings show the surface landscape, as well as the thickness of the topsoil, overburden, surface material being extracted, water table and bedrock if applicable (see Drawing 2, found in the pocket).

Cross-sections must show the existing conditions and those expected after the site is reclaimed from and beyond the lease boundaries to include any topographic features (slopes, watercourses, etc.) or adjacent interests (roads, other pit developments, etc.). Each pair of cross-sections should be at right angles to each other or be located in a manner that shows a reasonable representation of the pit and the adjacent land.

The cross-sections for the sample plan (Drawing 2) are identified as A-A' and B-B'. For larger pits, additional cross-sections are usually required to represent the variations that are usually encountered.

Layer Depths

1. Surface Elevation: Topography maps, air photos or a topographical survey can provide the surface elevation information which can be transposed on to the cross sections.

2. Determining Depth of Material Layers: The best way to determine the materials at various depths is to use drill-log information.

3. Depth to the Water Table: The depth is to be shown on the cross-sectional drawings, and is required where the water table will be within three feet (one metre) of the reclaimed pit surface.

4. Reclamation Grade: The depth of layers that are removed and replaced should be used to determine the surface elevation of the reclaimed pit.

Existing-Site Information

The information described below is to be shown clearly on the cross-sectional drawings of site conditions.

- Surface landscape features, including hills, gullies, water bodies, trees and vegetation. This is a conceptual drawing of the landscape and it need be approximate only.
- Existing topsoil depth.
- Existing overburden depth.
- The depth of the sand or gravel deposit.
- Water table depth (as appropriate).
- Buffer zones.
- Any stockpiles.
- Any existing pit areas.
- Land uses and existing vegetation cover.

Reclaimed-Site Information

The information listed below is to be clearly shown on the cross-sectional drawing.

- Surface landscape features of the reclaimed pit area. This is a conceptual drawing of the pit area after it is reclaimed. The original land surface can be added to show clearly the difference between original and reclaimed ground levels.
- The replaced topsoil layer.
- The replaced overburden layer.

- Revegetation and land use.
- Reclaimed slope angles.
- Surface water drainage direction if not obvious.
- Undisturbed buffer zones.
- Water table levels (where appropriate).
- Title block and legend, as shown on Drawing 2.

6.0 REPORTING REQUIREMENTS OF AN APPROVAL

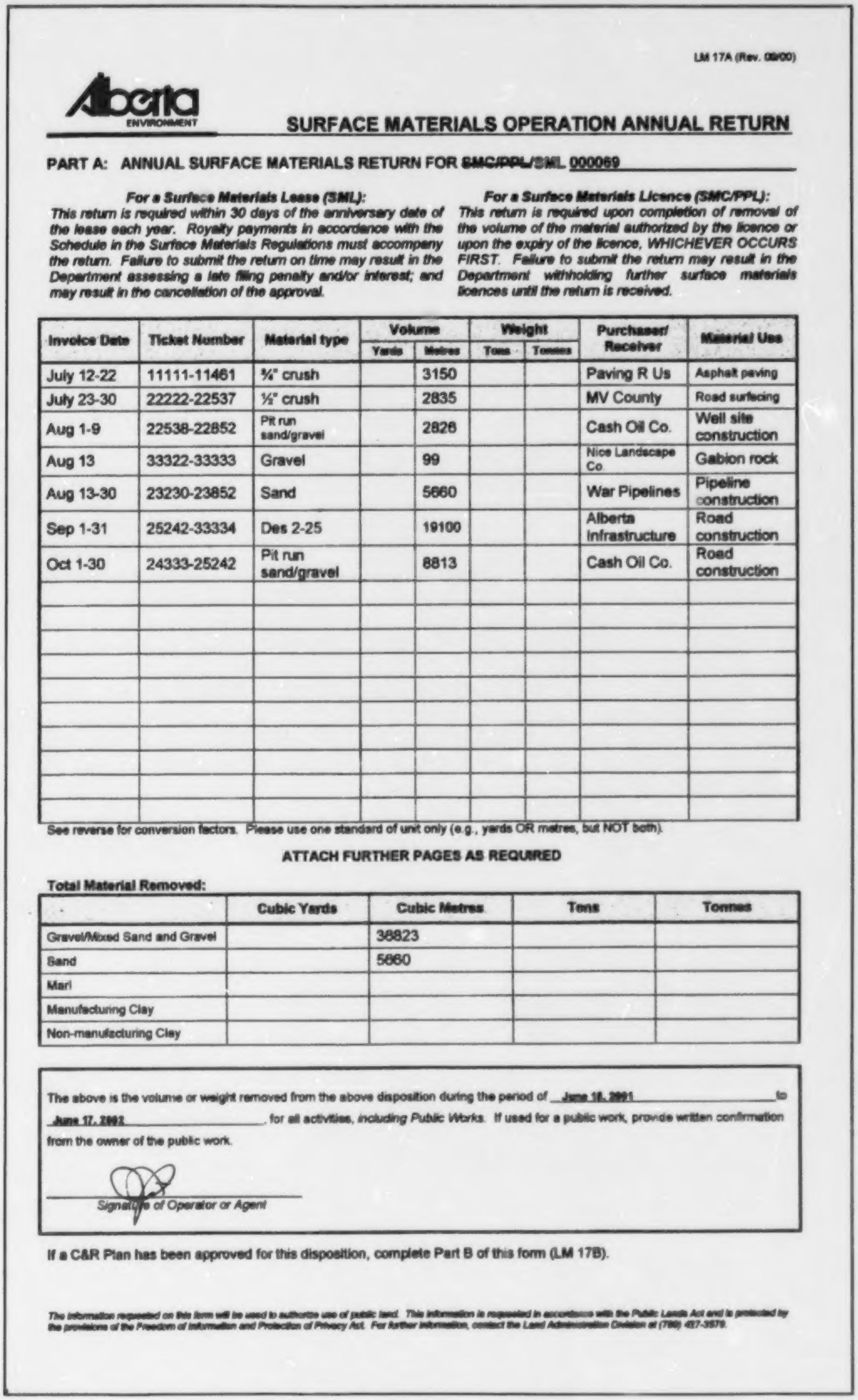
6.1 Surface Materials Operation Annual Return (Part A)

Annual Returns are required to report volumes removed through a PPL, SMC or SML. When reporting the volume removed in the past year, the operator must provide a breakdown with the following details:

- Dates on which the material was removed;
- The contractor's invoice or truckers' ticket numbers;
- The specific types of material removed (for example, the type of surface material);
- The volume of extracted material in cubic yards or cubic metres;
- The name of the purchaser/contractor; and
- How the material was used (for example, concrete, construction, fill).

For SML approvals royalty payment based on the removed volume must accompany the return.

Form – Annual Return (Part A)



LM 17A (Rev. 09/00)

Alberta
ENVIRONMENT

SURFACE MATERIALS OPERATION ANNUAL RETURN

PART A: ANNUAL SURFACE MATERIALS RETURN FOR ~~SMC/PPL/~~SML 000069

For a Surface Materials Lease (SML):
This return is required within 30 days of the anniversary date of the lease each year. Royalty payments in accordance with the Schedule in the Surface Materials Regulations must accompany the return. Failure to submit the return on time may result in the Department assessing a late filing penalty and/or interest; and may result in the cancellation of the approval.

For a Surface Materials Licence (SMC/PPL):
This return is required upon completion of removal of the volume of the material authorized by the licence or upon the expiry of the licence, WHICHEVER OCCURS FIRST. Failure to submit the return may result in the Department withholding further surface materials licences until the return is received.

Invoice Date	Ticket Number	Material type	Volume		Weight		Purchaser/ Receiver	Material Use
			Yards	Metres	Tons	Tonnes		
July 12-22	11111-11461	¾" crush		3150			Paving R Us	Asphalt paving
July 23-30	22222-22537	½" crush		2835			MV County	Road surfacing
Aug 1-9	22538-22852	Pit run sand/gravel		2826			Cash Oil Co.	Well site construction
Aug 13	33322-33333	Gravel		99			Nice Landscape Co.	Gabion rock
Aug 13-30	23230-23852	Sand		5660			War Pipelines	Pipeline construction
Sep 1-31	25242-33334	Des 2-25		19100			Alberta Infrastructure	Road construction
Oct 1-30	24333-25242	Pit run sand/gravel		8813			Cash Oil Co.	Road construction

See reverse for conversion factors. Please use one standard of unit only (e.g., yards OR metres, but NOT both).

ATTACH FURTHER PAGES AS REQUIRED

Total Material Removed:

	Cubic Yards	Cubic Metres	Tons	Tonnes
Gravel/Mixed Sand and Gravel		38823		
Sand		5660		
Marl				
Manufacturing Clay				
Non-manufacturing Clay				

The above is the volume or weight removed from the above disposition during the period of June 18, 2001 to June 17, 2002, for all activities, *including Public Works*. If used for a public work, provide written confirmation from the owner of the public work.

Signature of Operator or Agent

If a C&R Plan has been approved for this disposition, complete Part B of this form (LM 17B).

The information requested on this form will be used to authorize use of public land. This information is requested in accordance with the Public Lands Act and is protected by the provisions of the Freedom of Information and Protection of Privacy Act. For further information, contact the Land Administration Division at (780) 427-3570.

6.2 C&R Annual Report (Part B)

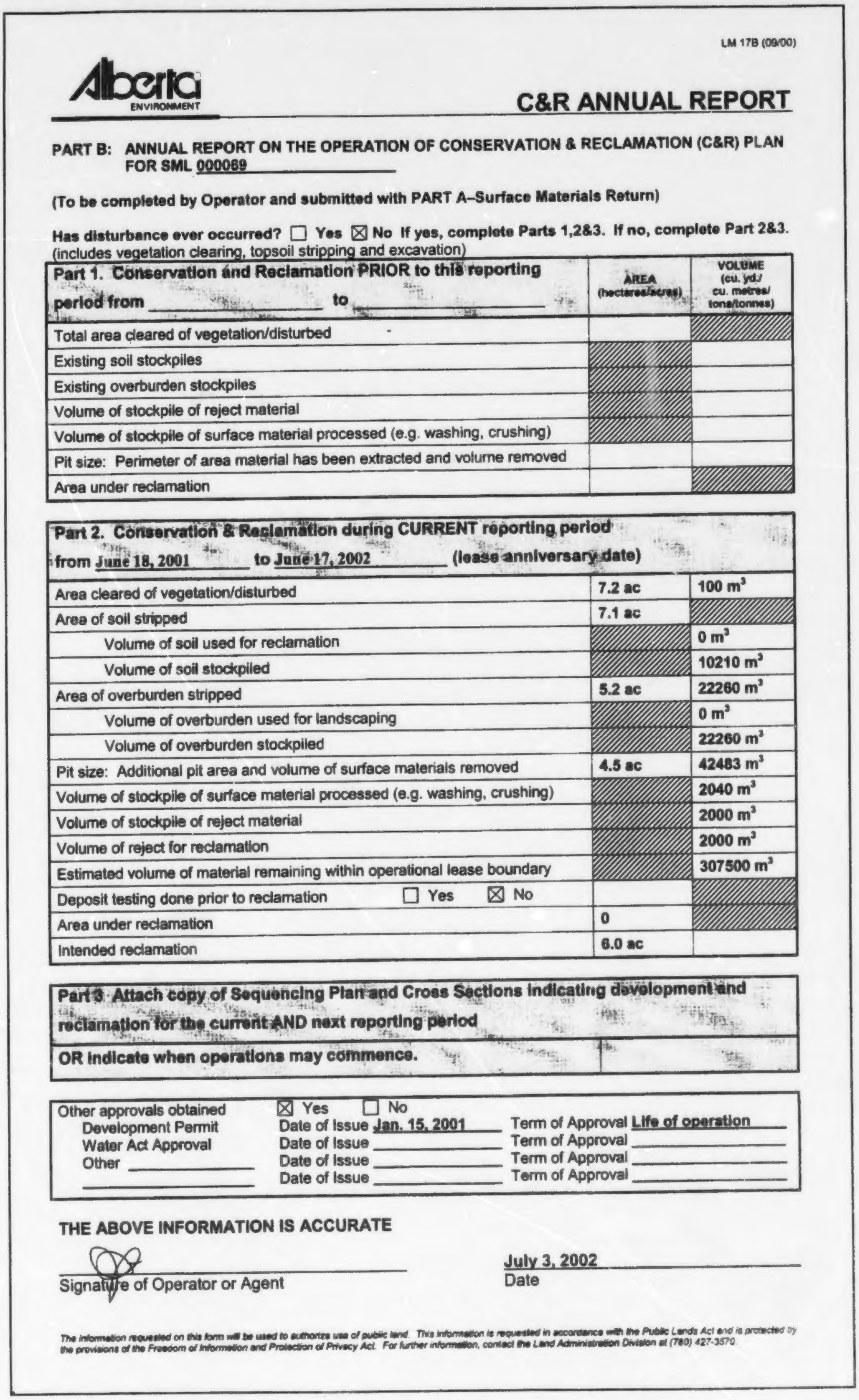
For the SML approval only, an operator is to submit an annual operating report to accompany the Annual Return. The report comprises a completed Part B form plus a plan showing the areas outlined by the form.

The best plan to accompany the report is copy of the Site Plan of the approved Conservation & Reclamation Plan showing the development status of the operation.

If no activity has taken place as planned or approved, a letter stating the reason for inactivity is required along with the accompanying annual return.

THE OPERATOR IS REMINDED THAT IF THE SUBMITTED ANNUAL OPERATING REPORT DOES NOT REFLECT THE DEVELOPMENT STATUS OR VOLUMES REPORTED BY THE RETURNS, A CONTOUR SURVEY MAY BE REQUESTED BY AENV.

Form - C&R Annual Report (Part B)



LM 17B (09/00)

Alberta ENVIRONMENT

C&R ANNUAL REPORT

PART B: ANNUAL REPORT ON THE OPERATION OF CONSERVATION & RECLAMATION (C&R) PLAN FOR SML 000089

(To be completed by Operator and submitted with PART A–Surface Materials Return)

Has disturbance ever occurred? ☐ **Yes** ☒ **No If yes, complete Parts 1,2&3. If no, complete Part 2&3.**
(includes vegetation clearing, topsoil stripping and excavation)

Part 1. Conservation and Reclamation PRIOR to this reporting period from ______ to ______	**AREA (hectares/acres)**	**VOLUME (cu. yd./ cu. metres/ tons/tonnes)**
Total area cleared of vegetation/disturbed		▨
Existing soil stockpiles	▨	
Existing overburden stockpiles	▨	
Volume of stockpile of reject material	▨	
Volume of stockpile of surface material processed (e.g. washing, crushing)	▨	
Pit size: Perimeter of area material has been extracted and volume removed		
Area under reclamation		▨

Part 2. Conservation & Reclamation during CURRENT reporting period from June 18, 2001 to June 17, 2002 (lease anniversary date)		
Area cleared of vegetation/disturbed	7.2 ac	100 m^3
Area of soil stripped	7.1 ac	▨
Volume of soil used for reclamation	▨	0 m^3
Volume of soil stockpiled	▨	10210 m^3
Area of overburden stripped	5.2 ac	22260 m^3
Volume of overburden used for landscaping	▨	0 m^3
Volume of overburden stockpiled	▨	22260 m^3
Pit size: Additional pit area and volume of surface materials removed	4.5 ac	42483 m^3
Volume of stockpile of surface material processed (e.g. washing, crushing)	▨	2040 m^3
Volume of stockpile of reject material	▨	2000 m^3
Volume of reject for reclamation	▨	2000 m^3
Estimated volume of material remaining within operational lease boundary	▨	307500 m^3
Deposit testing done prior to reclamation ☐ Yes ☒ No		▨
Area under reclamation	0	▨
Intended reclamation	6.0 ac	

Part 3 Attach copy of Sequencing Plan and Cross Sections indicating development and reclamation for the current AND next reporting period	
OR indicate when operations may commence.	

Other approvals obtained ☒ Yes ☐ No

Development Permit Date of Issue Jan. 15, 2001 Term of Approval Life of operation

Water Act Approval Date of Issue ______ Term of Approval ______

Other ______ Date of Issue ______ Term of Approval ______

______ Date of Issue ______ Term of Approval ______

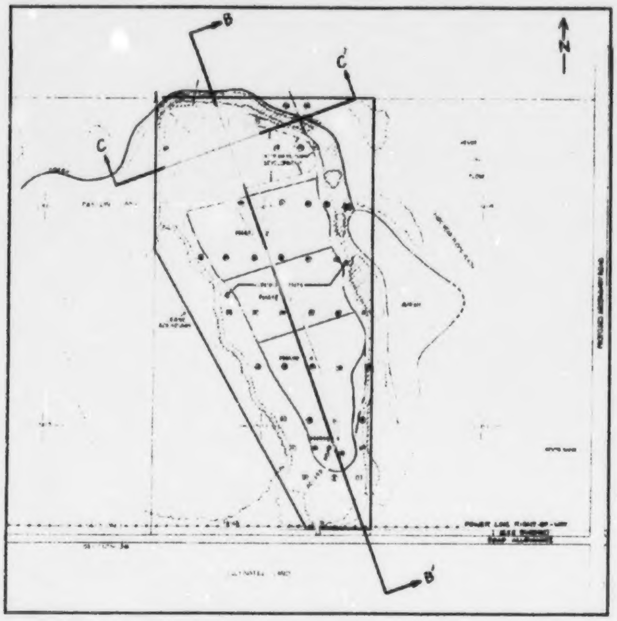
THE ABOVE INFORMATION IS ACCURATE

Signature of Operator or Agent

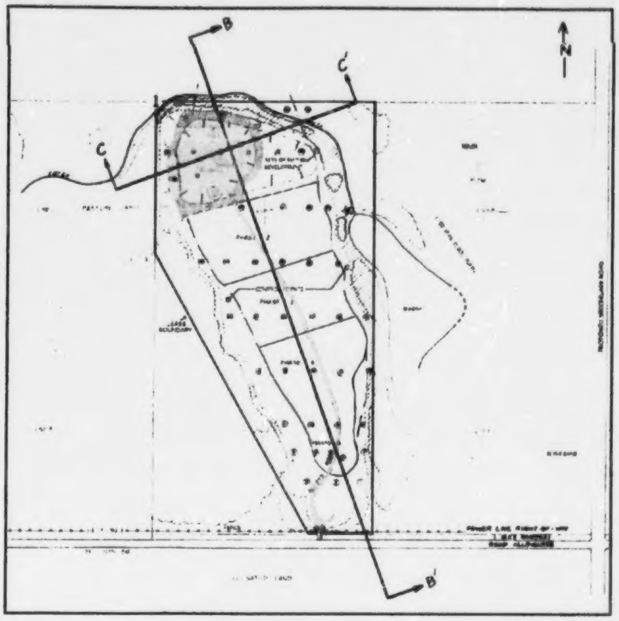
July 3, 2002
Date

The information requested on this form will be used to authorize use of public land. This information is requested in accordance with the Public Lands Act and is protected by the provisions of the Freedom of Information and Protection of Privacy Act. For further information, contact the Land Administration Division at (780) 427-3570.

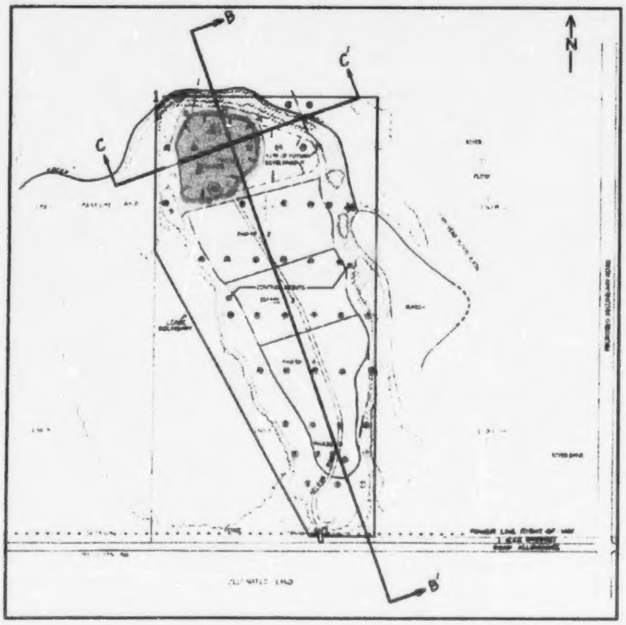
Annual Report Area Illustration



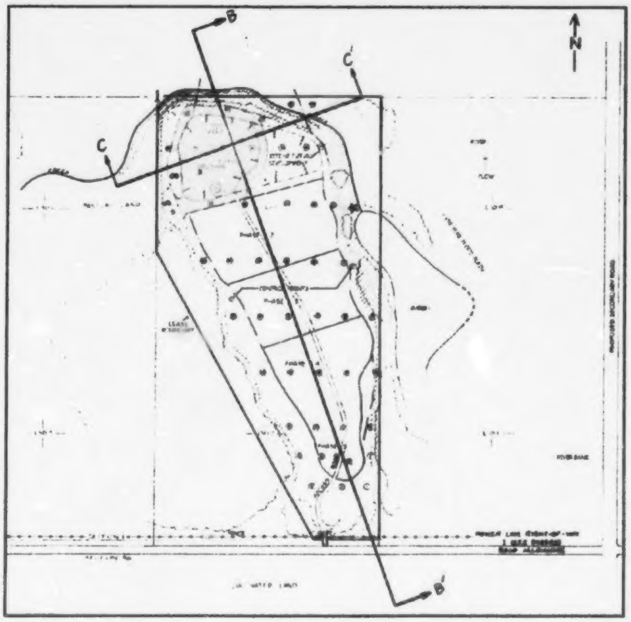
Area Cleared of Vegetation



Area of Soil Stripped



Area of Overburden Stripped



Pit Size

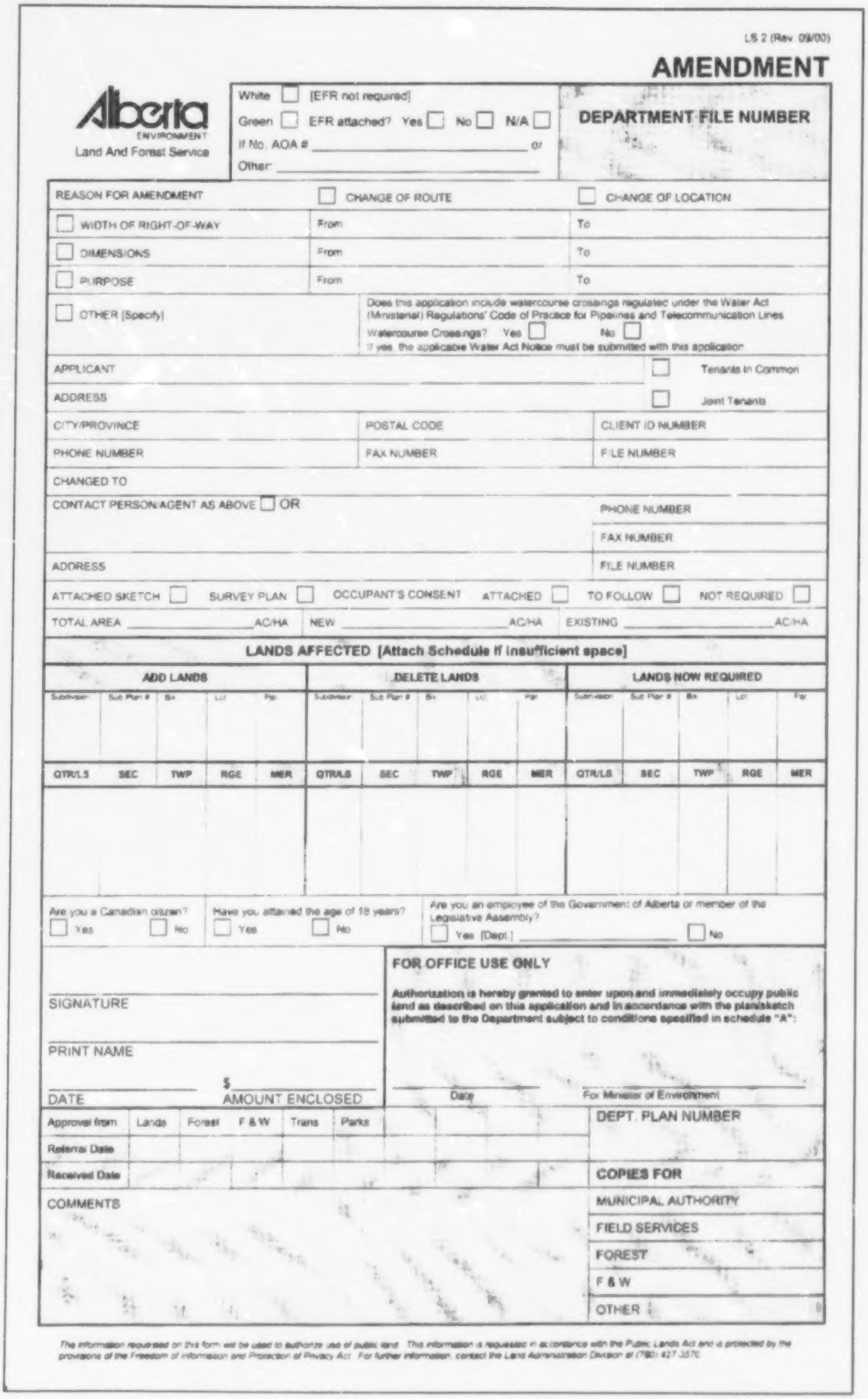
6.3 Amendments

Leases can be amended to add new areas of land or to delete areas that are no longer required.

NOTE: A RECLAMATION CERTIFICATE IS REQUIRED FOR AN AREA BEFORE THAT AREA CAN BE DELETED FROM THE LEASE.

If the operator amends his lease, a new sketch is required. The conservation and reclamation plan, or the operating plan, must also be updated.

Form – Amendment



LS 2 (Rev. 09/00)

AMENDMENT

Alberta
ENVIRONMENT
Land And Forest Service

White ☐ [EFR not required]
Green ☐ EFR attached? Yes ☐ No ☐ N/A ☐
If No, AOA # ______________________ or
Other: ______________________

DEPARTMENT FILE NUMBER

REASON FOR AMENDMENT	☐ CHANGE OF ROUTE	☐ CHANGE OF LOCATION
☐ WIDTH OF RIGHT-OF-WAY	From	To
☐ DIMENSIONS	From	To
☐ PURPOSE	From	To

☐ OTHER [Specify]

Does this application include watercourse crossings regulated under the Water Act (Ministerial) Regulations' Code of Practice for Pipelines and Telecommunication Lines
Watercourse Crossings? Yes ☐ No ☐
If yes, the applicable Water Act Notice must be submitted with this application

APPLICANT		☐ Tenants in Common
ADDRESS		☐ Joint Tenants
CITY/PROVINCE	POSTAL CODE	CLIENT ID NUMBER
PHONE NUMBER	FAX NUMBER	FILE NUMBER

CHANGED TO

CONTACT PERSON/AGENT AS ABOVE ☐ OR
PHONE NUMBER
FAX NUMBER
ADDRESS
FILE NUMBER

ATTACHED SKETCH ☐ SURVEY PLAN ☐ OCCUPANT'S CONSENT ATTACHED ☐ TO FOLLOW ☐ NOT REQUIRED ☐

TOTAL AREA ____________ AC/HA NEW ____________ AC/HA EXISTING ____________ AC/HA

LANDS AFFECTED [Attach Schedule if insufficient space]

ADD LANDS					DELETE LANDS					LANDS NOW REQUIRED				
Subdivision	Sub Plan #	Bk	Lot	Par	Subdivision	Sub Plan #	Bk	Lot	Par	Subdivision	Sub Plan #	Bk	Lot	Par
QTR/LS	SEC	TWP	RGE	MER	QTR/LS	SEC	TWP	RGE	MER	QTR/LS	SEC	TWP	RGE	MER

Are you a Canadian citizen? ☐ Yes ☐ No
Have you attained the age of 18 years? ☐ Yes ☐ No
Are you an employee of the Government of Alberta or member of the Legislative Assembly? ☐ Yes [Dept.] ______________ ☐ No

SIGNATURE

PRINT NAME

DATE
$ ____________ AMOUNT ENCLOSED

FOR OFFICE USE ONLY

Authorization is hereby granted to enter upon and immediately occupy public land as described on this application and in accordance with the plan/sketch submitted to the Department subject to conditions specified in schedule "A":

Date
For Minister of Environment

Approval from	Lands	Forest	F & W	Trans	Parks		
Referral Date							
Received Date							

DEPT. PLAN NUMBER

COMMENTS

COPIES FOR
MUNICIPAL AUTHORITY
FIELD SERVICES
FOREST
F & W
OTHER

The information requested on this form will be used to authorize use of public land. This information is requested in accordance with the Public Lands Act and is protected by the provisions of the Freedom of Information and Protection of Privacy Act. For further information, contact the Land Administration Division at (780) 427-3570.

6.4 Assignments

An assignment allows an operator to transfer a surface material operation to another party. The following items are required when a leaseholder wishes to assign his lease to another person or company.

- The original document of an unconditional assignment, properly executed by both parties.
- Appropriate fees (see Fees and Costs in back pocket).
- The other party's (assignee's) address.
- Written verification from the appropriate taxation authority that all taxes on the site have been paid.
- A completed declaration by the other party or assignee indicating they are 18 years of age or older, a Canadian citizen or permanent resident, and whether they are a government employee.
- All rental payments or current assessment charges must be paid up to date.
- Any company to which an assignment is made must be registered with the Corporate Registry, Alberta Department of Consumer and Corporate Affairs.
- A list of all encumbrances - mortgages must be discharged, or a letter must be supplied by the mortgagee stating consent to the assignment.
- In the case of more than one assignee, joint tenants or tenants in common should be noted.
- A Surface Materials Return from the date of the last return to the date of the assignment, along with any required royalty payment, must be supplied. Concurrence with the D & R plan must also be given.
- Where AENV is holding a security deposit in the form of **cash**, the assignor must confirm in writing if this deposit is to be transferred to the assignee or refunded to the assignor. If the assignor requests a refund, then the assignee is responsible for sending the necessary security deposit to AENV before the assignment can be registered. (see Fees and Costs)
- If the assignment is approved and registered by AENV, the assignee is responsible for all liabilities and conforming to conditions and existing approved plans.

Form – Assignment Information Letter

Alberta
ENVIRONMENT

Land and Forest Service
Land Administration Division

Petroleum Plaza - South Tower
5th Floor, 9915 - 108 Street
Edmonton, Alberta T5K 2G8
Phone: (780) 427-3570
Fax: (780) 422-9670

File No: SML 000000

Letter Date

Got Gravel Inc.
P.O. Box 123
Anywhere, Alberta
T6Z 102

Attention: Rockal Day

RE: Surface Materials Lease No. SML 000000
Pt. NE 31-091-10-W5M (36.5 acres approx.)
Purpose: Sand and Gravel
Assignment Information

In response to your inquiry, the following are the general requirements necessary to register an assignment of a Surface Materials Lease.

1. The Assignment Document must:
    - Be original
    - Be unconditional
    - Show the consideration
    - Be executed (seal or affidavit)
    - Contain the assignee address and phone number (if the assignee is a company, it must be registered with the Corporate Registry of Municipal Affairs).

2. Monetary Requirements:

a) Assignment Fee:
- $25.00 for the first quarter section of land held under disposition (or part thereof)
- $5.00 for each additional quarter section of land held under disposition (or part thereof)

b) Written verification from the taxing authority that all taxes with respect to the site have been paid.

.../2

- 2 -

c) **Lease Account:**

- The balance in the account must be current.

d) **Security Deposit:**

- If the current security deposit is cash, the assignor may choose to provide confirmation that the existing security deposit may be transferred to the assignee. If this not desirable, or if the security deposit is a form other than cash, the assignee must replace the security deposit.

3. **Additional Requirements:**

- The assignee must hold the interest in the lease.
- The lease must not be expired.
- The Assignor must provide the current lease document and approved Operating Plan or Conservation and Reclamation Plan. If one cannot be supplied to the department, one may be purchased for a fee of $<AMOUNT>. If a copy of the plan for the permit is required, please contact IHS Energy Canada Ltd. in Edmonton, Alberta at (780) 413-3382.
- Access to the lease must be indicated and included in the assignment if applicable
- A surface materials return (Form LM 17A) from the date of the last return to the date of the assignment must be submitted and royalties paid on any material moved in that period.
- Any encumbrances registered against the lease must be discharged prior to the disposition being assigned.

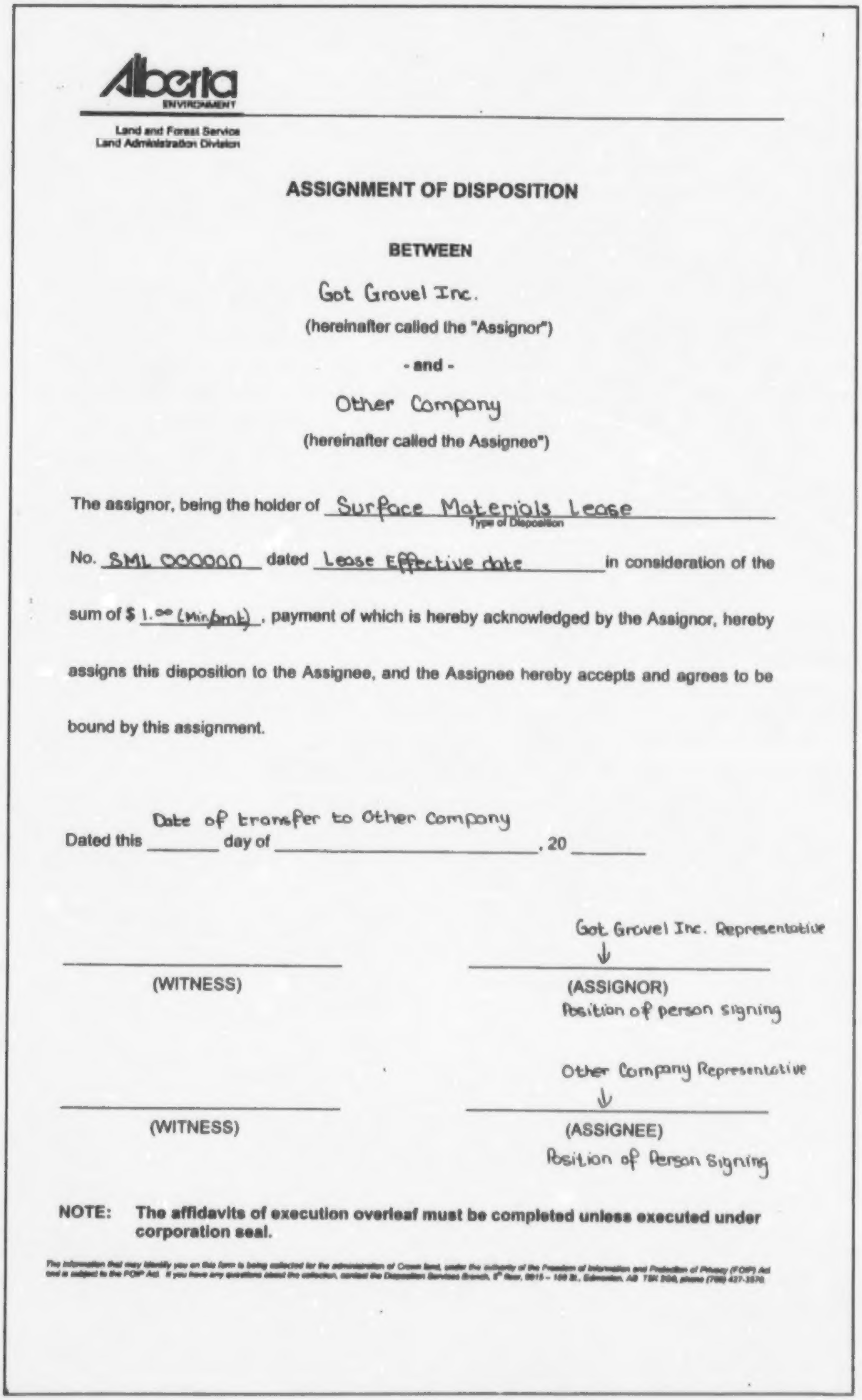
The department has a standard assignment form which may be used. If you have any questions on the above requirements, please contact the Commercial/Gravel & Shoreland Unit, Disposition Services Branch in Edmonton at (780) 427-3570. An assignment is not registered until the department provides confirmation of registration.

Sincerely,

Land Administrator
Commercial/Gravel & Shoreland Unit
Disposition Services Branch

/ds
c: Land Manager

Form – Assignment of Disposition (Page 1)



Alberta
ENVIRONMENT

Land and Forest Service
Land Administration Division

ASSIGNMENT OF DISPOSITION

BETWEEN

Got Gravel Inc.

(hereinafter called the "Assignor")

- and -

Other Company

(hereinafter called the Assignee")

The assignor, being the holder of Surface Materials Lease
Type of Disposition

No. SML 000000 dated Lease Effective date in consideration of the sum of $ 1.00 (min/amt), payment of which is hereby acknowledged by the Assignor, hereby assigns this disposition to the Assignee, and the Assignee hereby accepts and agrees to be bound by this assignment.

Date of transfer to Other Company
Dated this ________ day of ____________________, 20 ________

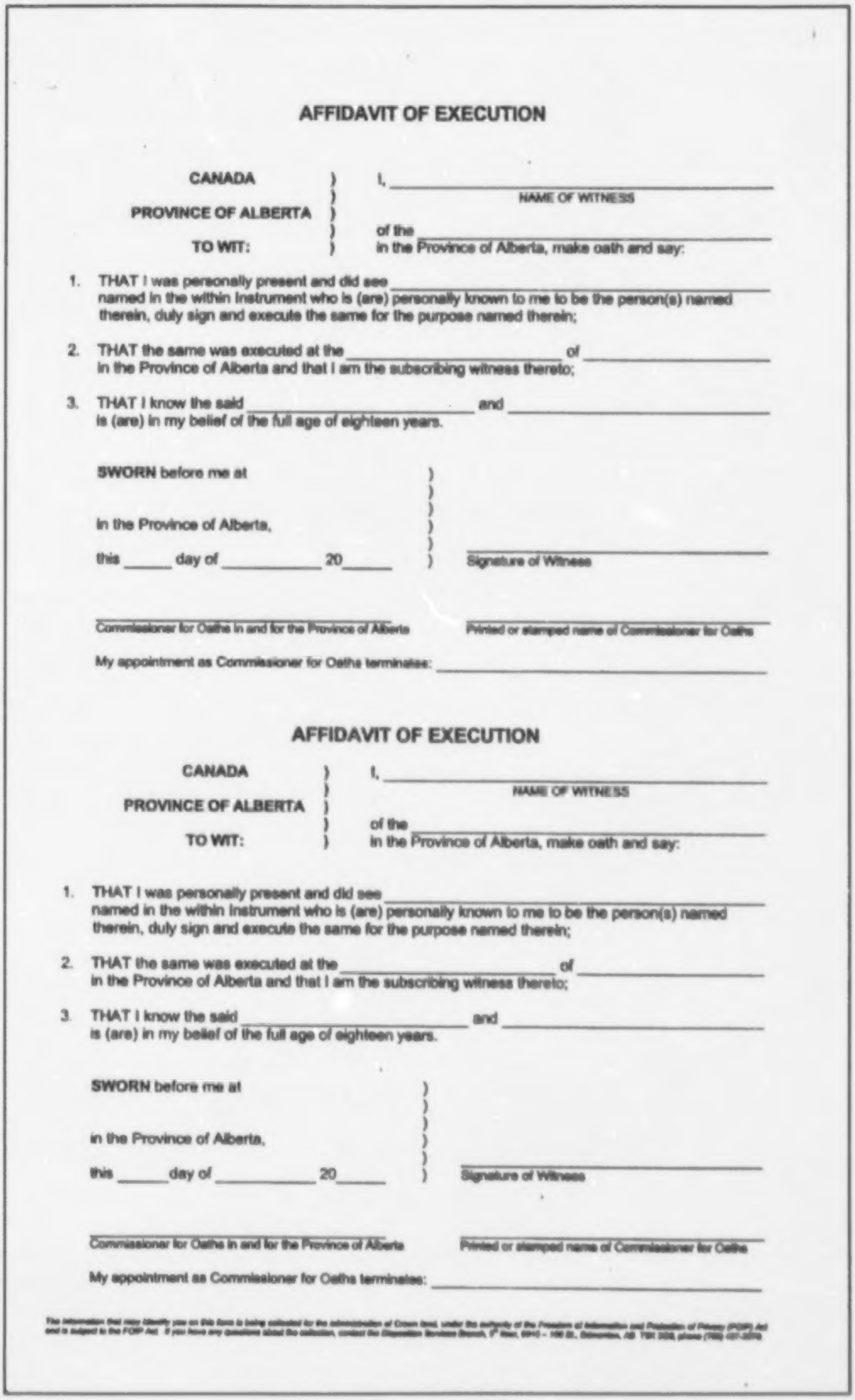
Got Gravel Inc. Representative
↓
________________________ (WITNESS)
________________________ (ASSIGNOR)
Position of person signing

Other Company Representative
↓
________________________ (WITNESS)
________________________ (ASSIGNEE)
Position of Person Signing

NOTE: The affidavits of execution overleaf must be completed unless executed under corporation seal.

The information that may identify you on this form is being collected for the administration of Crown land, under the authority of the Freedom of Information and Protection of Privacy (FOIP) Act and is subject to the FOIP Act. If you have any questions about the collection, contact the Disposition Services Branch, 5th floor, 9915 – 108 St., Edmonton, AB T5K 2G8, phone (780) 427-3570.

Form – Assignment of Disposition (Page 2)



AFFIDAVIT OF EXECUTION

CANADA) I, ______________________________
) NAME OF WITNESS
PROVINCE OF ALBERTA)
) of the ______________________________
TO WIT:) in the Province of Alberta, make oath and say:

1. THAT I was personally present and did see ______________________________ named in the within Instrument who is (are) personally known to me to be the person(s) named therein, duly sign and execute the same for the purpose named therein;
2. THAT the same was executed at the ____________________ of ____________________ in the Province of Alberta and that I am the subscribing witness thereto;
3. THAT I know the said ____________________ and ____________________ is (are) in my belief of the full age of eighteen years.

SWORN before me at)
)
)
in the Province of Alberta,)
)
this _____ day of ___________ 20_____) ______________________________
Signature of Witness

______________________________ ______________________________
Commissioner for Oaths in and for the Province of Alberta Printed or stamped name of Commissioner for Oaths

My appointment as Commissioner for Oaths terminates: ______________________________

AFFIDAVIT OF EXECUTION

CANADA) I, ______________________________
) NAME OF WITNESS
PROVINCE OF ALBERTA)
) of the ______________________________
TO WIT:) in the Province of Alberta, make oath and say:

1. THAT I was personally present and did see ______________________________ named in the within Instrument who is (are) personally known to me to be the person(s) named therein, duly sign and execute the same for the purpose named therein;
2. THAT the same was executed at the ____________________ of ____________________ in the Province of Alberta and that I am the subscribing witness thereto;
3. THAT I know the said ____________________ and ____________________ is (are) in my belief of the full age of eighteen years.

SWORN before me at)
)
)
in the Province of Alberta,)
)
this _____ day of ___________ 20_____) ______________________________
Signature of Witness

______________________________ ______________________________
Commissioner for Oaths in and for the Province of Alberta Printed or stamped name of Commissioner for Oaths

My appointment as Commissioner for Oaths terminates: ______________________________

6.5 Extensions and Renewals

Authorizations to carry out surface material exploration are not renewed. A new application may be made for exploration, but once an existing exploration authority has expired, any applications received are accepted on a first-come, first-served basis. This is done to provide a fair opportunity for other parties who may be interested in applying for a specific area.

Surface Materials Leases may be renewed. An updated operating plan, plus a conservation and reclamation plan are required. These are reviewed with respect to the previous and planned operations of the pit.

6.6 Cancellations

A lease can be cancelled at certain times or for specific reasons, as described below:

Before the lease expires (upon request of the operator)

- A reclamation certificate is required before the lease can be cancelled. The operator must complete the reclamation work, and then apply for a certificate. Rental and taxes must be paid until the date this certificate is issued.

- The lease is cancelled effective the date of the reclamation certificate. The security deposit is then refunded if the operator is not indebted to the Crown.

When a lease expires

- The lease will be cancelled when it expires if the holder does not wish to renew it. Reclamation must still be completed, and a reclamation certificate must be obtained. The security deposit is released once the reclamation certificate is issued. A form is mailed to the applicant to complete before an inspection is made for issuance of a reclamation certificate. (See Appendix IV).

Failure to comply

- The lease is subject to cancellation if an operator fails to comply with the annual requirements, the lease conditions, or any request of the Minister.

- Reclamation is still required and a reclamation certificate must be issued before the security deposit can be released. Once reclamation is complete and provided the operator is not indebted to the Crown, the security deposit is released.

Failure to develop

- Failure to develop an area within the time specified on the lease may result in cancellation of the lease and forfeiture of any performance deposit held by AENV. Reclamation is still required if the area has been disturbed and a reclamation certificate must be issued whether the site has been disturbed or not.

Environmental damage

Operations terminated for environmental reasons must be identified and the reasons justified by written confirmation from departmental staff. These justifications must include an outline of the environmental problem and evidence that the operator was given an opportunity to mitigate the problem.

Approvals are granted conditional to certain operating parameters. Some of these operational parameters may effect the extraction operation. The proponent has the option to hire a qualified professional to design an operation that will meet the objectives of the conditions while maximizing the extraction of the resources.

6.7 Inspections and their Consequences

Leases are inspected periodically by AENV/AFRD officers to ensure that operations are progressing according to the approved plans.

Listed below are certain aspects of a surface material operation that may cause problems if not properly addressed by an operator.

6.7.1 Trespass

Any activity the operator conducts outside his lease boundary may be an act of trespass. This may result in a penalty. In addition, if the surface material removed by the operator belongs to someone else, civil action for loss or damage is also possible.

6.7.2 Non-Compliance of Operating Conditions

Any operation conducted outside the approved operating area, or any operating condition not complied with, is subject to penalty.

6.7.3 Environmental Damage

During a site inspection, departmental officers check environmental conditions. If existing or potential damage is noted, the operations may be altered or suspended.

APPENDIX I: AVAILABLE INFORMATION

Aerial Photographs

Aerial photographs are one of the best tools to use in locating new gravel deposits because various types of forest cover, geographical and geological features can be identified. They also act as a documentation of the pre-disturbance conditions. Many operators are using the aerial photography blowups to plot their Conservation & Reclamation plans on. Aerial photographs are available through Air Photo Services - 9920 - 108 Street, Main Floor, Edmonton, Alberta, Canada T5K 2M4 – website @ http://www.gov.ab.ca/env/info/airphoto/ & commercial mapping outlets.

Aggregate Resource maps

Provides information for the exploration of sand and gravel resources. Available through the Alberta Geological Survey publications 4th Floor, Twin Atria, 4999 - 98th Avenue, Edmonton, Alberta, T6B 2X3 - website @ http://www.ags.gov.ab.ca/AGS_PUB/PUB_INDEX.HTP.

Forest Cover maps

Provides an aid for vegetative cover information and determining the location of a site. The "Phase III" and "Alberta Vegetation Inventory" maps are available though Air Photo Services - 9920 - 108 Street, Main Floor, Edmonton, Alberta, Canada T5K 2M4

Hydrology Information

Hydrological maps and reports can be used for exploration purposes as well as a to supplement subsurface information. Available through the Alberta Geological Survey publications 4th Floor, Twin Atria, 4999 - 98th Avenue, Edmonton, Alberta, T6B 2X3 - website @ http://www.ags.gov.ab.ca/AGS_PUB/PUB_INDEX.HTP.

Integrated Resource Plans

Describes land use designations on a regional basis. Plans available through Alberta Environment - Information Centre, Main Floor, 9920-108 St., Edmonton, Alberta, T5K 2M6 – website @ http://www.gov.ab.ca/env/info/infocentre/publications/landirp.html.

Resource Base Access Maps

Provides information to assist in locating theTownship survey grid relative to ground disturbances such as well sites, seismic lines and roads. Available through commercial mapping outlets.

Surficial Geology maps

Provides information for the exploration of surface materials. Available through the Alberta Geological Survey publications 4th Floor, Twin Atria, 4999 - 98th Avenue, Edmonton, Alberta, T6B 2X3 - website @ http://www.ags.gov.ab.ca/AGS_PUB/PUB_INDEX.HTP & commercial mapping outlets.

Township Plots

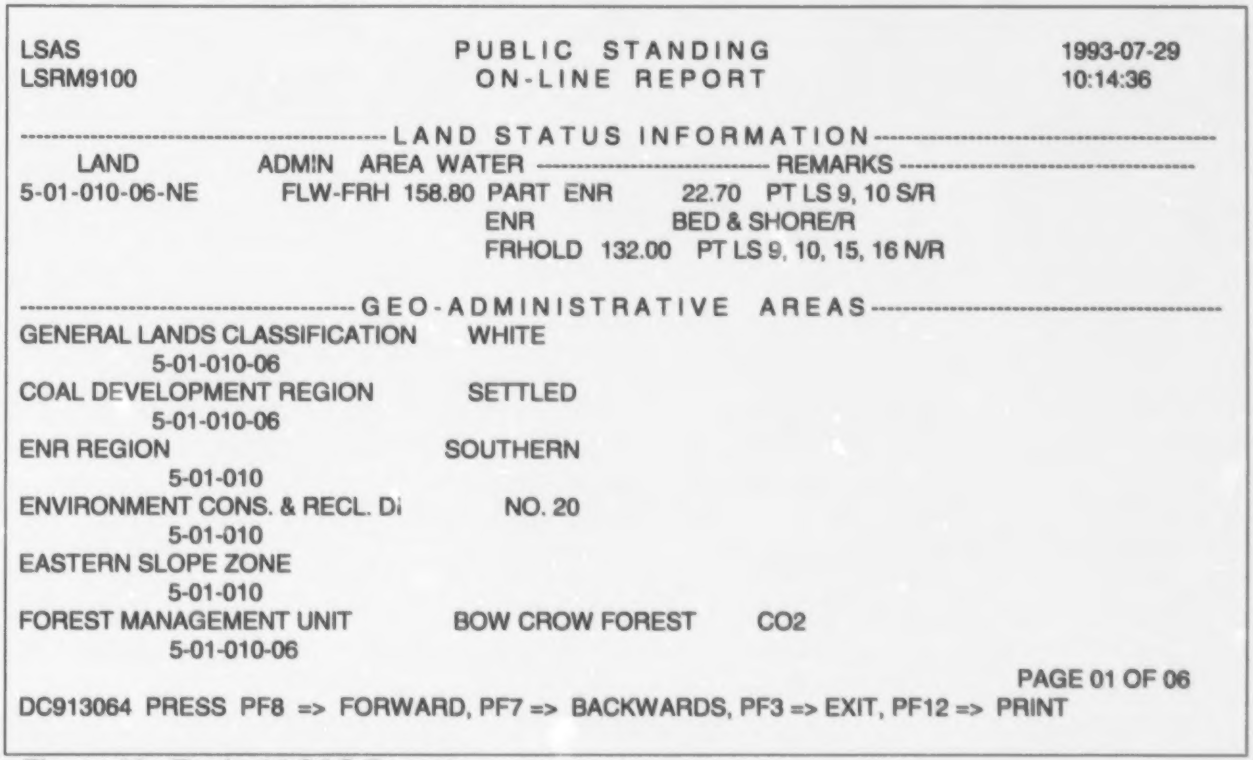
Township plots are maps of the activities registered under LSAS. These are available through IHS Energy Canada Ltd. at (780) 413-3380 in Edmonton, Alberta - website @ http://www.ihsenergy.ab.ca/.

Topographic Information

Topographic maps may provide sufficient topographic information to establish elevation control for developing the cross section profiles. The maps are available through commercial map outlets or ordering through Natural Resources Canada (website @ http://cartes.nrcan.gc.ca/maps101/nts.html).

Land Status Automated System (LSAS)

The Land Status Automated System (LSAS) records all land interests on public lands within a requested area. This system provides the names of current reservation or leaseholders for gravel and where the holdings are located. Direct consultation with AENV staff may prove helpful. A LSAS report specific to the land applied for is attached to an approval. For determining surrounding interests the activities can be identified by the Township Plots or by a report generated for the surrounding land descriptions. Searches can be ordered through the Information Centre, 3 Floor, Monenco Place Building, 801 – 6 Avenue, S.W., Calgary, Alberta, T2P 3W2, (403) 297-6324.



```
LSAS                           PUBLIC  STANDING                          1993-07-29
LSRM9100                       ON-LINE  REPORT                           10:14:36

-------------------------LAND  STATUS  INFORMATION-------------------------
    LAND           ADMIN   AREA  WATER ---------------- REMARKS -------------------
5-01-010-06-NE       FLW-FRH 158.80 PART  ENR        22.70   PT LS 9, 10 S/R
                                  ENR             BED & SHORE/R
                                  FRHOLD  132.00   PT LS 9, 10, 15, 16 N/R

-----------------------GEO-ADMINISTRATIVE   AREAS-------------------------
GENERAL LANDS CLASSIFICATION       WHITE
           5-01-010-06
COAL DEVELOPMENT REGION            SETTLED
           5-01-010-06
ENR REGION                        SOUTHERN
            5-01-010
ENVIRONMENT CONS. & RECL. Di          NO. 20
            5-01-010
EASTERN SLOPE ZONE
            5-01-010
FOREST MANAGEMENT UNIT           BOW CROW FOREST       CO2
            5-01-010-06
                                                               PAGE 01 OF 06
DC913064  PRESS  PF8  =>  FORWARD, PF7 =>  BACKWARDS, PF3 => EXIT, PF12 =>  PRINT
```

Figure 12: Typical LSAS Report

APPENDIX II: ADDITIONAL INFORMATION SOURCES

Locating Surface material

Alberta Research Council. Hydrogeology Map Series. Publications Alberta Research Council. Edmonton.

Alberta Research Council. Surficial Geology Map Series. Publications Alberta Research Council. Edmonton.

Bates, R.L. 1960. Geology of the Industrial Rocks and Minerals. Harper & Brothers, Publishers, New York.

Edwards, W.A.D. and D.K. Chao. 1989. Bibliography Index and Overview of Aggregate Resource Publications. Alberta Geological Survey. Edmonton. 92p.

Mollard, J.D. (n.d.) Landforms and Surface Materials of Canada; A Stereoscopic Airphoto Atlas and Glossary. Regina, Saskatchewan.

Society of Mining Engineers. 1983. Industrial Minerals and Rocks (Nonmetallics Other Than Fuels). American Institute of Mining, Metallurgical, and Petroleum Engineers, Inc. New York, New York. Volumes 1 and 2.

Site Analysis

Alberta Research Council. (n.d.) Index of Soil Surveys in Alberta. 1988. Publications Alberta Research Council. Edmonton.

Alberta Forestry, Lands and Wildlife. (n.d.) Regional/Sub-regional Integrated Resource Plans. Edmonton.

Alberta Forestry, Lands and Wildlife. (n.d.) Land Status Automated System Report. Crown Land Information Branch. Edmonton.

Ealey, D.M. 1987. A Bibliography of Alberta Mammalogy. Natural History Occasional Paper No. 8. Provincial Museum of Alberta. 400pp.

Hardy, W.G. 1967. Alberta; A Natural History. Mel Hurtig, Publishers, Edmonton, Alberta. 341pp.

Flawn, P.T. 1970. Environmental Geology; Conservation, Land-use Planning, and Resource Management. Harper & Row, Publishers. New York. 313pp.

Packer, J.G., and C.E. Bradley. 1984. A Checklist of the Rare Vascular Plants in Alberta. Provincial Museum of Alberta, Natural History Occasional Paper No. 5: vi + 112pp., 360 maps.

Spalding, D.A.E. 1980. A Nature Guide to Alberta. Hurtig Publishers. Provincial Museum of Alberta Publication No. 5. 368pp.

Smith, V.K. and J.V. Krutilla. 1982. Explorations in Natural Resource Economics. John Hopkins University Press. Baltimore and London. 352pp.

Wormington, H.M. and R.G. Forbis. 1965. An Introduction to the Archaeology of Alberta, Canada. Proceedings Number Eleven. Denver Museum of Natural History. 248pp.

Regulatory

PROVINCIAL

- Public Lands Act. RSA 1980. Chapter P-30 Plus Amendments.
- Public Lands Act. Disposition and Fees Regulation. A.R. 11/78 with Amendments.
- Environmental Protection and Enhancement Act. Conservation and Reclamation Regulations
- Water Act
- Code of Practice for Watercourse Crossings
- Pipeline Act

FEDERAL

- Fisheries Act
- Navigable Waters Act

Development

Alberta Environment. 1980. Waste Water Management Guidelines for Alberta Sand & Gravel Washing Operations. Water Quality Branch. Edmonton. 12p.

Alberta Environment. 1981. Sand and Gravel Washing Operations; Guidelines for Licensing Surface Water Diversions; the Water Resources Act. Surface Water Rights Branch. 7p.

Reclamation

Alberta Environment. 1992. Pit and Quarry Reclamation in Alberta. Reclamation Research Technical Advisory Committee. 133p.

Green, J.E., R.E. Salter and C.E. Fooks. 1987. Reclamation of Wildlife Habitat in the Canadian Prairie Provinces. The Delta Environmental Management Group Ltd. 2 vols. 248 pp.

Olson, G.W. 1981. Soils and the Environment. Chapman and Hall. New York. 178 pp.

Franmore Communications Inc. 1991. Rehabilitation Articles. Canadian Aggregates. May, pp. 12-22.

Watson, L.E., R.W. Parker and D.F. Polster. 1980. Manual of Species Suitability for Reclamation in Alberta. Alberta Land Conservation and Reclamation Council Report #RRTAC 80-5. 2 vols. 541pp.

University of Minnesota. 1982. Wildlife Values of Gravel Pits. Agricultural Experiment Station Miscellaneous Publication 17 - 1982. 249pp.

APPENDIX III: APPLICATION FOR WATER APPROVAL

Alberta
ENVIRONMENT

PART C

APPLICATION FOR WATER APPROVAL

Pursuant to the Environmental Protection and Enhancement Act

Applicant Name:	
LFS File # SML/DRS/SMC	**EPEA File #**
	WA File #

Part C must be completed when pit operations on private or public land involve:

(1) water quality management
(2) activity within the high water (i.e., 1:100 year flood) of a watercourse or waterbody
(3) diversion of a watercourse
(4) washing operations,
(5) dewatering,
(6) wet pit excavation, or
(7) a waterbody will be created on reclamation

WATER QUALITY INFORMATION

1. Indicate the operating period for the pit:

Months per Year		Hours per Day	Days per Month	Months per Year		Hours per Day	Days per Month
January	☐ YES ☐ NO	______	______	July	☐ YES ☐ NO	______	______
February	☐ YES ☐ NO	______	______	August	☐ YES ☐ NO	______	______
March	☐ YES ☐ NO	______	______	September	☐ YES ☐ NO	______	______
April	☐ YES ☐ NO	______	______	October	☐ YES ☐ NO	______	______
May	☐ YES ☐ NO	______	______	November	☐ YES ☐ NO	______	______
June	☐ YES ☐ NO	______	______	December	☐ YES ☐ NO	______	______

NOTE: A plot plan (a C&R plan is acceptable) and process flow diagram depicting all processing equipment used for pit operations is required in support for the application for approval.

2. Will water from the pit be discharged to the surrounding watershed? ☐ YES ☐ NO

If YES, complete the following:

a. Identify the receiving watercourse: ______________________________

b. Indicate the rate of discharge: ______________________________

c. Indicate the method of conveying that discharge: ______________________________

d. Describe the discharge outfall: ______________________________

3. Will any control facilities be used for handling surface run-off? ☐ YES ☐ NO
If YES, describe the control facilities:

____

4. What will be the maximum production rate of sand and gravel (tons per hour/tonnes per hour)? __________

5. What is the proposed maximum production rate for sand and gravel washing (tons per hour/tonnes per hour)? __________

6. Are settling ponds being constructed for sand and gravel washing or pit dewatering? ☐ YES ☐ NO

If YES, indicate the number, size and location of the settling ponds: ______________________________

____

7. Indicate the proposed procedures for handling accumulated sediments in the settling ponds: ______________________________

____

8. If wash water is not recycled, explain why not: ______________________________

____

9. What is the required number of employees for the pit operation? __________

10. Are septic facilities available on site for personnel or employees? ☐ YES ☐ NO

If YES, describe septic facilities and how sanitary sewage is handled: ______________________________

____

11. Will any other types of solid waste be produced? ☐ YES ☐ NO

If YES, describe the type of solid waste how it will be disposed: ______________________________

12. Will underground storage tanks be used for pit operations? ☐ YES ☐ NO

If YES, indicate the size and contents of the tanks. Size: __________ Contents: __________

13. List any chemicals to be used for the pit operations:

______________________________ ______________________________

______________________________ ______________________________

______________________________ ______________________________

______________________________ ______________________________

14. Will wet pit excavation occur? ☐ YES ☐ NO

FLOODPLAINS

Pit operations – surface water management

15. Will pit operations occur within the 1:100 year floodplain of a watercourse or waterbody? ☐ YES ☐ NO

If YES, provide plans in accordance with the Basic Conservation and Reclamation Plan in the Guide for Pits. For access roads which cross a watercourse or waterbody, the *Water Act Code of Practice for Watercourse Crossings* must be followed, except in those situations, where a watercourse crossings identified as being exempt from requiring an approval under Schedules 1and 2 of the *Water Act Water Ministerial Regulations.*

WATER DIVERSION

16. Will pit operation include a diversion of a watercourse? ☐ YES ☐ NO

If YES, provide plans and supporting documentation addressing the existing and proposed channel, channel stability and impacts on land and fisheries. In some cases an assessment may be required by a professional engineer or professional biologist.

17. Will construction or upgrading of access roads to the pit operation affect a watercourse or waterbody? ☐ YES ☐ NO

If YES, provide plans in accordance with the Basic Conservation and Reclamation Plan in the Guide for Pits. For access roads which cross a watercourse or waterbody, the *Water Act Code of Practice for Watercourse Crossings* must be followed, except in those situations, where a watercourse crossings identified as being exempt from requiring an approval under Schedules 1and 2 of the *Water Act Water Ministerial Regulations.*

WATER USE FOR WASHING OPERATIONS AND PIT DEWATERING

18. Is water being used, removed or impounded for:
    - a. sand and gravel washing? ☐ YES ☐ NO
    - b. pit dewatering? ☐ YES ☐ NO

If YES, provide plans showing the water sources location and details of the water diversion works, including point of outlet, Show the information on the Conservation and Reclamation plans. Complete the following information.

Surface Water Sources

a. Indicate the sources ____________________________

b. Rate of withdrawal (litres/minute or gallons/minute) ____________________

c. Estimated daily requirements (litres/day or gallons/day) ____________________

d. Estimated yearly requirements (litres/year or gallons/year) ____________________

e. Which month of the year will water be diverted? ____________________

Groundwater Source

a. Anticipated depth interval of groundwater to be used or removed ________ feet to ________

b. Rate of withdrawal (litres/minute or gallons/minute) ____________________

c. Estimated daily requirements (litres/day or gallons/day) ____________________

d. Estimated yearly requirements (litres/year or gallons/year) ____________________

e. Which month of the year will water be diverted? ____________________

f. Are there any other groundwater users near by? ☐ YES ☐ NO

If YES, provide a site plan showing all users within 1 mile (1.6 kilometres), their well location and production depth.

PROPOSED WATERBODY AS RECLAMATION

19. Will a waterbody be created in the final reclaimed? ☐ YES ☐ NO

If YES, provide the following:

a. What is the intended use: ☐ Fisheries ☐ Waterfowl habitat ☐ Stock watering ☐ Irrigation ☐ Recreational ☐ Wildlife habitat ☐ Other ____________________

b. How will this be accomplished? ____________________

____

____

c. Plans and cross section of proposed waterbodies.

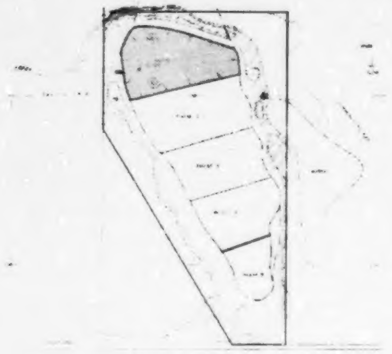
Show the information on the water body on the Conservation and Reclamation drawings in Part B.

I certify that the information provided in this application is an accurate description of the site and of the operation and reclamation of the pit. I will conserve and reclaim the site as described in this application, follow the terms and conditions of the approval, and secure a Reclamation Certificate upon completion.

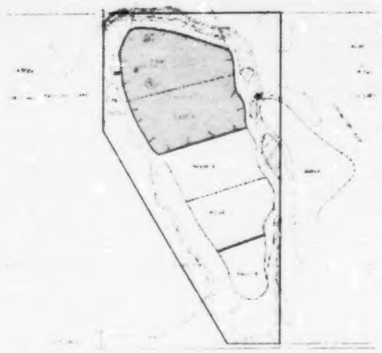
NAME ____________________ (please print) SIGNATURE ____________________

TITLE ____________________ DATE ____________________

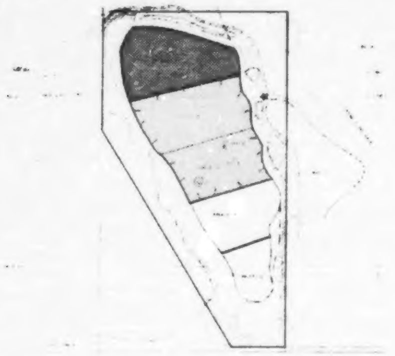
Phase 1 Development (commencing date, 2001)



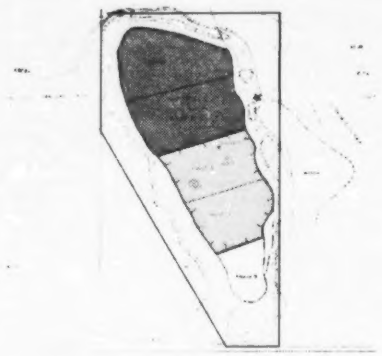
Phase 1+2 Development



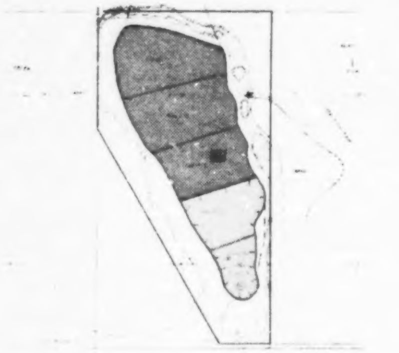
Phase 2+3 Development, Phase 1 Reclamation



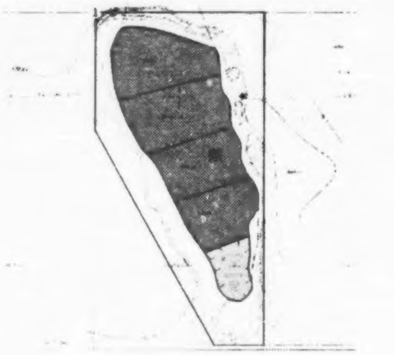
Phase 3+4 Development, Phase 2 Reclamation



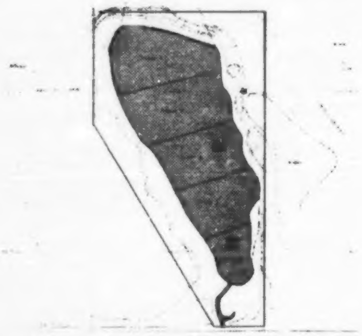
Phase 4+5 Development, Phase 3 Reclamation



Phase 5 Development, Phase 4 Reclamation



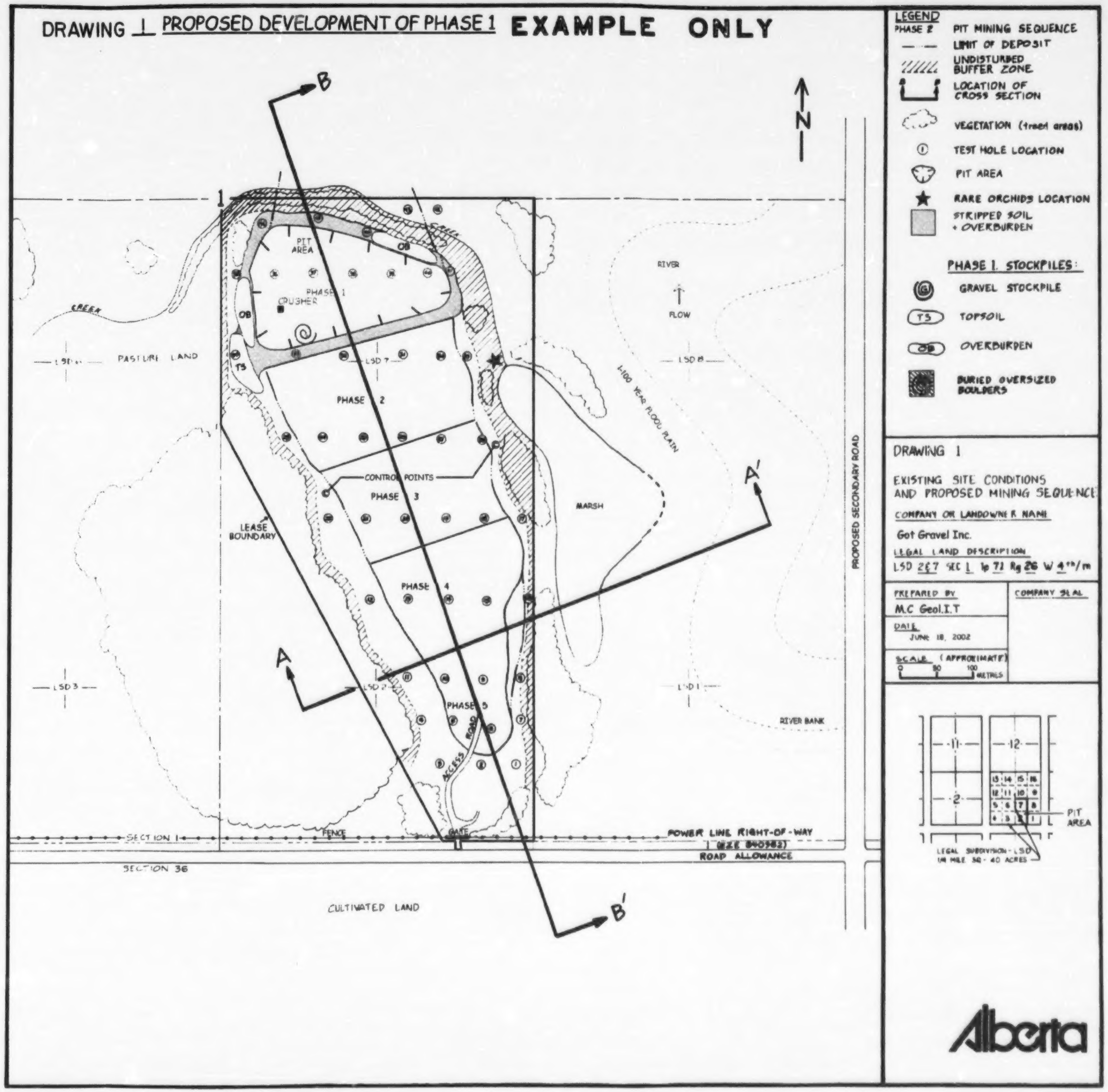
Phase 5 Reclamation (expected year 2012)



	Area of expected disturbance		
Phase 1	10.0 acres	=	4.0 ha
Phase 2	7.4 acres	=	3.0 ha
Phase 3	6.0 acres	=	2.4 ha
Phase 4	5.3 acres	=	2.1 ha
Phase 5	3.0 acres	=	1.2 ha
Total	31.7 acres	=	12.7 ha

☐	Undeveloped Lands
▒	Developed Lands
■	Reclaimed Lands

DRAWING 1 PROPOSED DEVELOPMENT OF PHASE 1 EXAMPLE ONLY


LEGEND
PHASE 2 PIT MINING SEQUENCE
LIMIT OF DEPOSIT
UNDISTURBED BUFFER ZONE
LOCATION OF CROSS SECTION
VEGETATION (treed areas)
TEST HOLE LOCATION
PIT AREA
RARE ORCHIDS LOCATION
STRIPPED SOIL + OVERBURDEN
PHASE 1 STOCKPILES:
GRAVEL STOCKPILE
TS TOPSOIL
OB OVERBURDEN
BURIED OVERSIZED BOULDERS
N
B
B'
A
A'
1
PIT AREA
PHASE 1
CRUSHER
OB
TS
PASTURE LAND
CREEK
LSD 7
LSD 8
LSD 2
LSD 1
LSD 3
PHASE 2
CONTROL POINTS
PHASE 3
PHASE 4
PHASE 5
ACCESS ROAD
LEASE BOUNDARY
RIVER
FLOW
1:100 YEAR FLOOD PLAIN
MARSH
RIVER BANK
PROPOSED SECONDARY ROAD
SECTION 1
FENCE
GATE
POWER LINE RIGHT-OF-WAY
ROAD ALLOWANCE
SECTION 36
CULTIVATED LAND
11
12
2
13 14 15 16
12 11 10 9
5 6 7 8
4 3 2 1
PIT AREA
LEGAL SUBDIVISION - LSD
1/4 MILE SQ - 40 ACRES

DRAWING 1

EXISTING SITE CONDITIONS
AND PROPOSED MINING SEQUENCE

COMPANY OR LANDOWNER NAME

Got Gravel Inc.

LEGAL LAND DESCRIPTION

LSD 2&7 SEC 1 Tp 71 Rg 26 W 4th/m

PREPARED BY

M.C Geol.I.T

DATE

JUNE 18, 2002

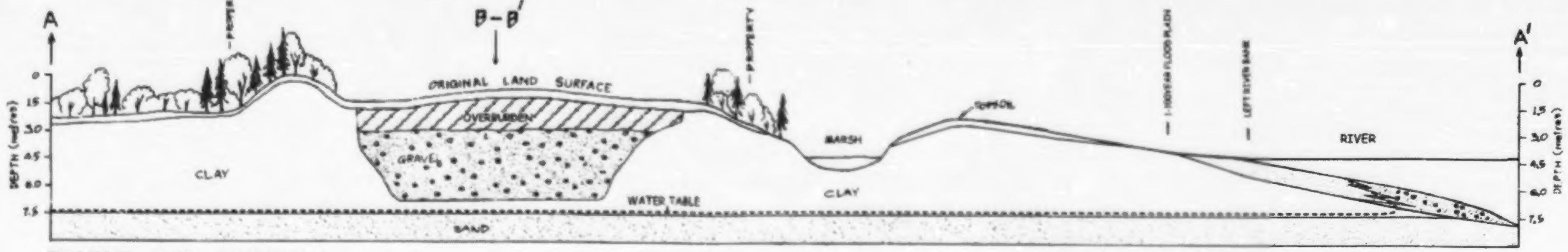
SCALE (APPROXIMATE)
0 50 100 METRES

COMPANY SEAL

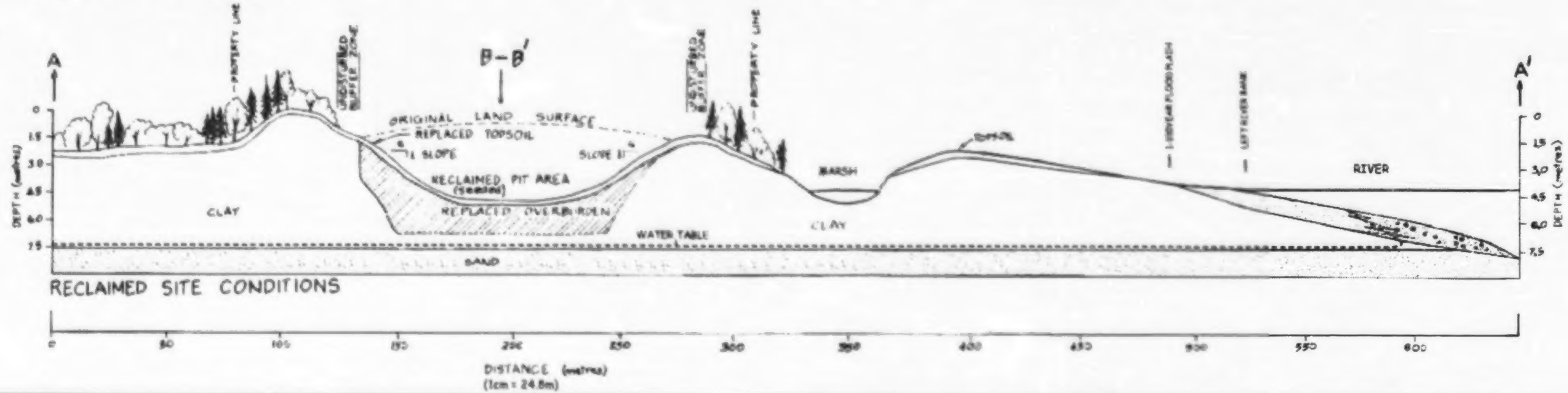
Alberta

DRAWING 2 PROPOSED DEVELOPMENT OF PHASE 1 EXAMPLE ONLY

CROSS SECTION A-A'

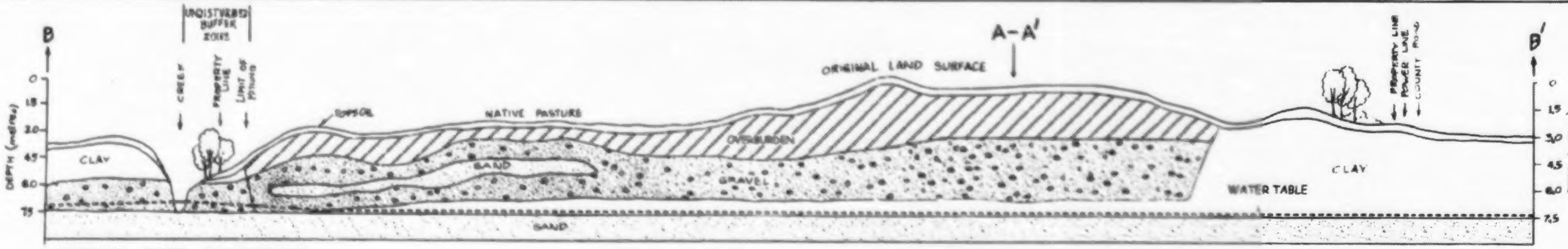

A
PROPERTY LINE
B-B'
PROPERTY LINE
1:100 YEAR FLOOD PLAIN
LEFT RIVER BANK
A'
ORIGINAL LAND SURFACE
OVERBURDEN
GRAVEL
TOPSOIL
MARSH
RIVER
CLAY
CLAY
WATER TABLE
SAND
DEPTH (metres)
0
1.5
3.0
4.5
6.0
7.5

EXISTING SITE CONDITIONS

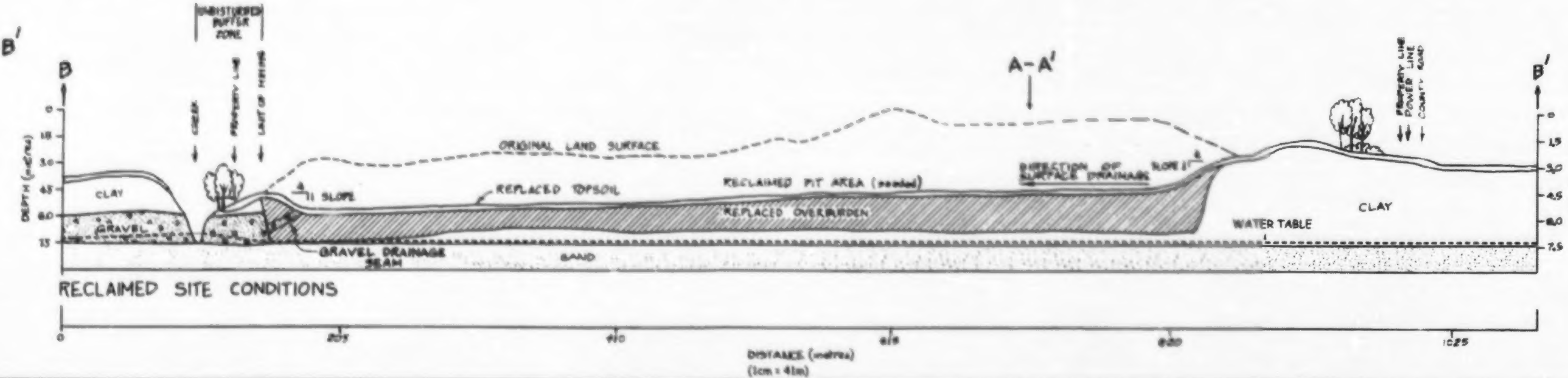

A
PROPERTY LINE
UNDISTURBED BUFFER ZONE
B-B'
UNDISTURBED BUFFER ZONE
PROPERTY LINE
1:100 YEAR FLOOD PLAIN
LEFT RIVER BANK
A'
ORIGINAL LAND SURFACE
REPLACED TOPSOIL
4:1 SLOPE
SLOPE 1:4
RECLAIMED PIT AREA (seeded)
REPLACED OVERBURDEN
TOPSOIL
MARSH
RIVER
CLAY
CLAY
WATER TABLE
SAND
DEPTH (metres)
0
1.5
3.0
4.5
6.0
7.5
0
50
100
150
200
250
300
350
400
450
500
550
600
DISTANCE (metres)
(1cm = 24.8m)

RECLAIMED SITE CONDITIONS

CROSS SECTION B-B'


UNDISTURBED BUFFER ZONE
B
CREEK
PROPERTY LINE
LIMIT OF MINING
A-A'
ORIGINAL LAND SURFACE
PROPERTY LINE
POWER LINE
COUNTY ROAD
B'
TOPSOIL
NATIVE PASTURE
OVERBURDEN
SAND
GRAVEL
CLAY
CLAY
WATER TABLE
SAND
DEPTH (metres)
0
1.5
3.0
4.5
6.0
7.5

EXISTING SITE CONDITIONS


UNDISTURBED BUFFER ZONE
B
CREEK
PROPERTY LINE
LIMIT OF MINING
A-A'
PROPERTY LINE
POWER LINE
COUNTY ROAD
B'
ORIGINAL LAND SURFACE
4:1 SLOPE
REPLACED TOPSOIL
RECLAIMED PIT AREA (seeded)
REPLACED OVERBURDEN
DIRECTION OF SURFACE DRAINAGE
SLOPE 1:4
CLAY
GRAVEL
CLAY
WATER TABLE
GRAVEL DRAINAGE SEAM
SAND
DEPTH (metres)
0
1.5
3.0
4.5
6.0
7.5
0
205
410
615
820
1025
DISTANCE (metres)
(1cm = 41m)

RECLAIMED SITE CONDITIONS

DRAWING 2
CROSS SECTIONS

COMPANY OR LANDOWNER NAME
Got Gravel Inc.

LEGAL DESCRIPTION
LSD 2&7 SEC 1 Tp 71 Rg 26 W 4th/m

PREPARED BY
M.C Geol.I.T

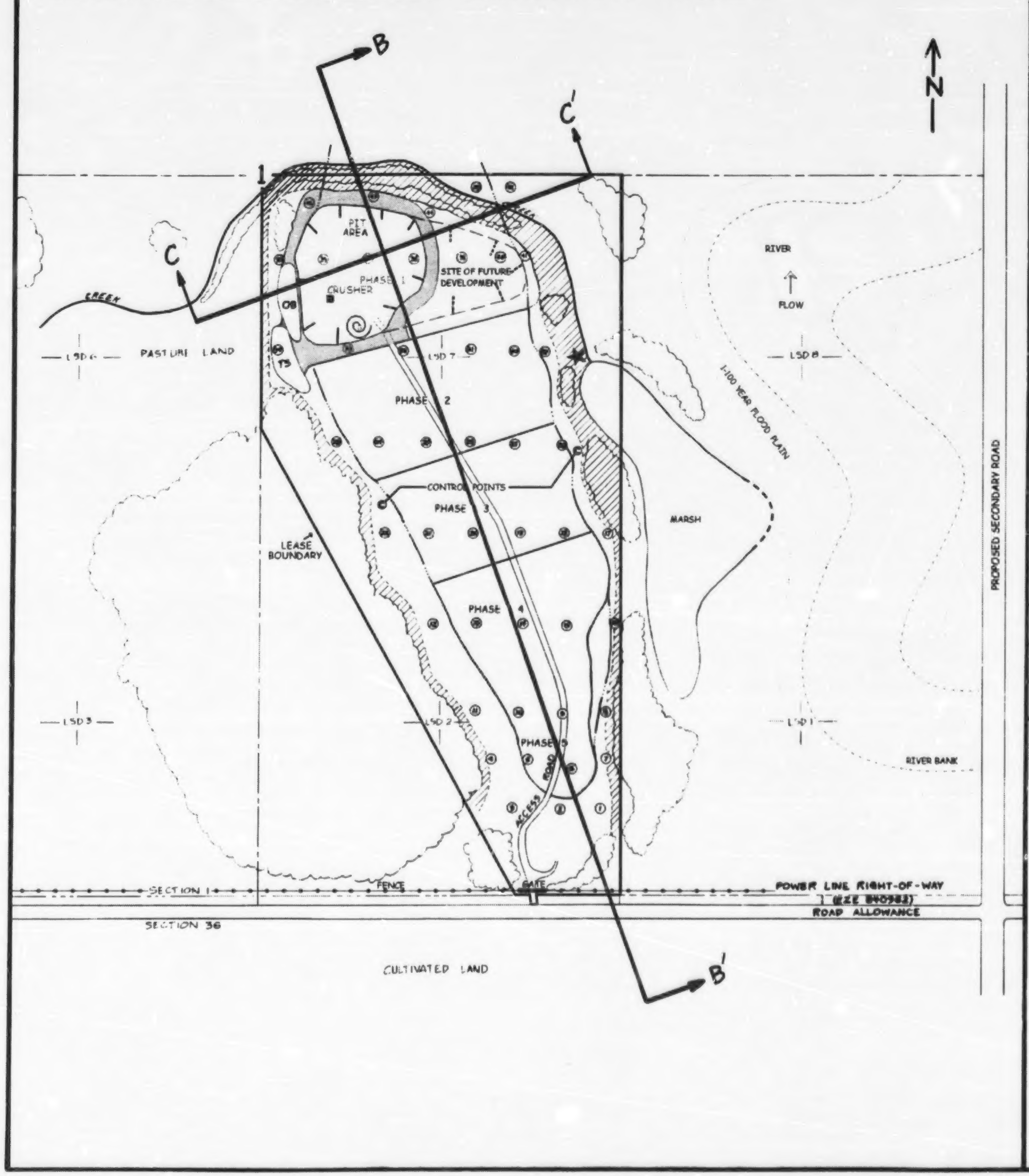
COMPANY SEAL

DATE
JUNE 18, 2002

SCALE
AS SHOWN

Alberta

DRAWING ANNUAL REPORT, PHASE 1 **EXAMPLE ONLY**


N
B
B'
C
C'
1
CREEK
PIT AREA
PHASE 1
CRUSHER
SITE OF FUTURE DEVELOPMENT
OB
TS
LSD 6
PASTURE LAND
LSD 7
LSD 8
PHASE 2
CONTROL POINTS
PHASE 3
LEASE BOUNDARY
PHASE 4
PHASE 5
ACCESS ROAD
LSD 3
LSD 2
LSD 1
RIVER
FLOW
1:100 YEAR FLOOD PLAIN
MARSH
RIVER BANK
PROPOSED SECONDARY ROAD
FENCE
GATE
SECTION 1
SECTION 36
POWER LINE RIGHT-OF-WAY
(EZE 840982)
ROAD ALLOWANCE
CULTIVATED LAND

LEGEND

PHASE 2	PIT MINING SEQUENCE
— · —	LIMIT OF DEPOSIT
▨	UNDISTURBED BUFFER ZONE
⊔	LOCATION OF CROSS SECTION
☁	VEGETATION (treed areas)
ⓘ	TEST HOLE LOCATION
◯	PIT AREA
★	RARE ORCHIDS LOCATION
▒	STRIPPED SOIL + OVERBURDEN

PHASE I. STOCKPILES:

Ⓖ	GRAVEL STOCKPILE
(TS)	TOPSOIL
(OB)	OVERBURDEN
▩	BURIED OVERSIZED BOULDERS

DRAWING ANNUAL REPORT, PHASE 1

EXISTING SITE CONDITIONS

COMPANY OR LANDOWNER NAME

Got Gravel Inc.

LEGAL LAND DESCRIPTION

LSD 2&7 SEC 1 Tp 71 Rg 26 W 4th/m

PREPARED BY

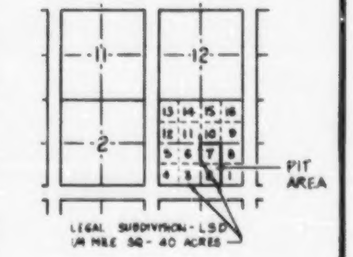
M.C Geol.I.T

DATE

JUNE 18, 2002

SCALE (APPROXIMATE)

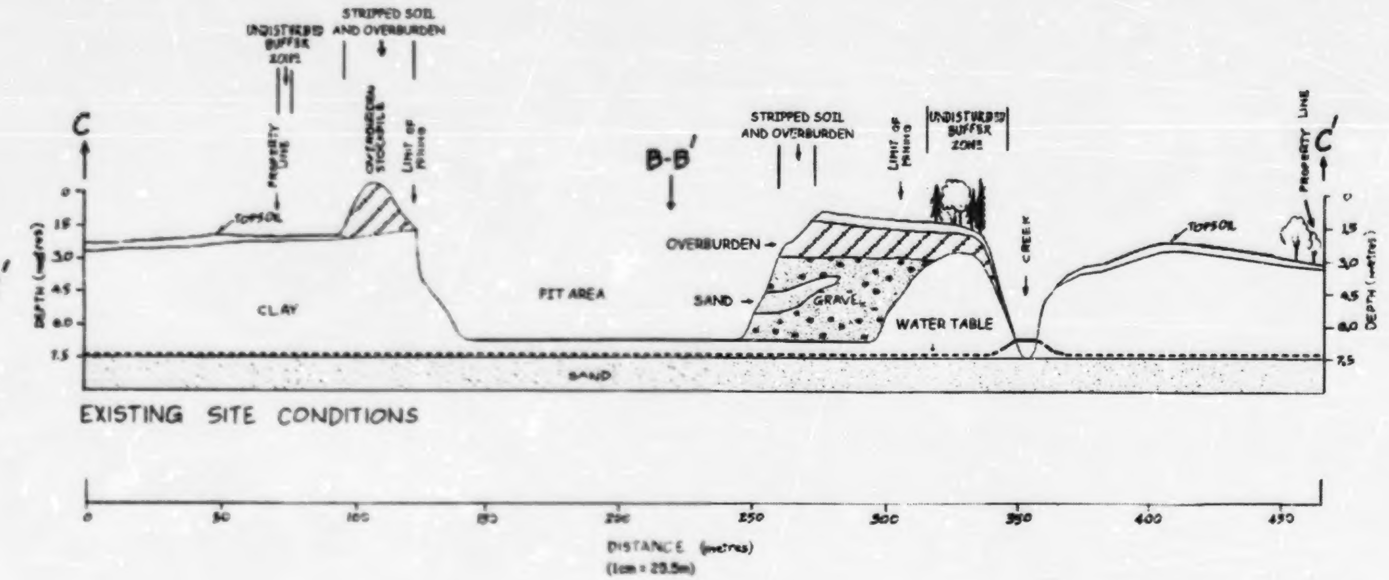
COMPANY SEAL


0
50
100
METRES
11
12
2
13
14
15
16
12
11
10
9
5
6
7
8
4
3
2
1
PIT AREA
LEGAL SUBDIVISION - LSD
1/4 MILE SQ - 40 ACRES

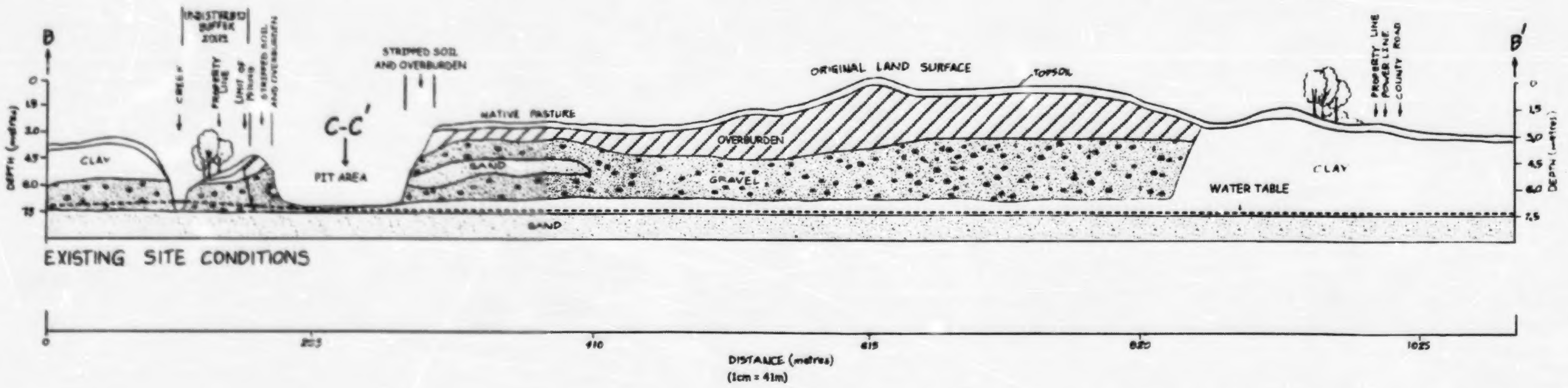
Alberta

DRAWING ANNUAL REPORT, PHASE 1 **EXAMPLE ONLY**

CROSS SECTION C-C′


C
UNDISTURBED BUFFER ZONE
STRIPPED SOIL AND OVERBURDEN
PROPERTY LINE
OVERBURDEN STOCKPILE
LIMIT OF MINING
TOPSOIL
B-B′
STRIPPED SOIL AND OVERBURDEN
LIMIT OF MINING
UNDISTURBED BUFFER ZONE
PROPERTY LINE
C′
DEPTH (metres)
0
1.5
3.0
4.5
6.0
7.5
CLAY
PIT AREA
OVERBURDEN
SAND
GRAVEL
WATER TABLE
CREEK
TOPSOIL
SAND
EXISTING SITE CONDITIONS
0
50
100
150
200
250
300
350
400
450
DISTANCE (metres)
(1cm = 29.5m)

CROSS SECTION B-B′


B
UNDISTURBED BUFFER ZONE
CREEK
PROPERTY LINE
LIMIT OF MINING
STRIPPED SOIL AND OVERBURDEN
C-C′
PIT AREA
STRIPPED SOIL AND OVERBURDEN
NATIVE PASTURE
ORIGINAL LAND SURFACE
TOPSOIL
OVERBURDEN
SAND
GRAVEL
CLAY
CLAY
WATER TABLE
SAND
PROPERTY LINE
POWER LINE
COUNTY ROAD
B′
DEPTH (metres)
0
1.5
3.0
4.5
6.0
7.5
EXISTING SITE CONDITIONS
0
205
410
615
820
1025
DISTANCE (metres)
(1cm = 41m)

DRAWING 2
CROSS - SECTIONS

COMPANY OR LANDOWNER NAME

Got Gravel Inc.

LEGAL DESCRIPTION

LSD 2&7 SEC 1 Tp 71 Rg 26 W 4th/m

PREPARED BY

M.C Geol.I.T

DATE

JUNE 18, 2002

SCALE

AS SHOWN

COMPANY SEAL

Alberta

RLM 15 (REV. 11/00)

Alberta
ENVIRONMENT

APPLICATION FOR CONSERVATION AND RECLAMATION APPROVAL
PART B1

(Pursuant to the Public Lands Act)

Applicant Name: GOT GRAVEL INC. **LFS File No.: SML/~~DRS~~** 000069

The following pages are required information for the Conservation and Reclamation Plan for a pit on Public Land.

For an approval on private land: Use Form "Application for Conservation and Reclamation Approval - Part B".

For an approval on public land: This form is to be submitted within 180 days after leasing approval is granted and prior to commencement of any operations.

NOTE: It may be helpful to refer to a departmental officer or the publication, "A Guide to 'Surface Material' Resource Extraction on Public Lands" & "A User Guide To Pit and Quarry Reclamation in Alberta" - Alberta Environment.
x The question requires an x in any applicable box or written response.
# The question requires a numerical answer.
Failure to provide a response to any of the questions marked by x or # will be automatically rejected.

SITE ASSESSMENT

1. Resource Demand

x There is a need for the clay ☐, manufacturing clay ☐, sand ☒, silt ☒, gravel ☒, marl ☐, in this location
x for road construction/maintenance ☒, concrete production ☐, asphalt production ☐, road sub base ☒, other pipeline and well site construction.

2. Existing land use

x cultivation ☐, grazing ☒, native range or grassland ☒, timber ☐, wildlife habitat ☐, fish habitat ☐, industrial ☐, recreation ☐, other ______.
x Site evidence found: motorized vehicle trails ☒, camp fire site ☐, evidence of livestock use ☐, recreational trails ☐, excavation or extraction development ☐, other ______.

3. Existing Disturbances

x Evidence of previous man-made alterations. Yes ☒, No ☐, Unknown ☐.
The site has been disturbed by vegetation removal _____ ha, topsoil removal _____ ha, overburden removal _____ ha, surface material removal _____ ha (approx. _____ cu m have been removed).
The site contains fencing ☒, gate/s ☒, storage tanks ☐, storage shed ☐, stock piles ☐, other ______.
x Remote sensing has been used to assess the site area. Yes ☒, No ☐
The remote sensing dated 98/12/14 documents the present ground condition. Yes ☒, No ☐, Unknown ☐.

4. Topography
Indicate the slope class of the site land based on Canada Land Inventory (CLI) slope classes.

x

CLI Class	Landscape	Slope Inclinations		CLI Class	Landscape	Slope Inclinations	
1 ☐	level	0 - 0.5%	(200:1)	5 ☐	moderate slopes	10 - 15%	(6:1)
2 ☐	nearly level	0.5 - 2.5%	(50:1)	6 ☐	strong slopes	16 - 30%	(3:1)
3 ☒	very gentle slopes	3.5 - 5%	(20:1)	7 ☐	very strong slopes	31 - 45%	(2:1)
4 ☐	gentle slopes	6 - 9%	(10:1)				

x The site includes 24.4 ha upland ☒, _____ ha flood plain (1 to 100 year flood events) ☐, 0.34 ha water body/watercourse areas ☒. (area figures optional)

5. Vegetation types over development areas

# _____ ha no/sparsely vegetated, _____ ha aquatic, _____ ha peatland, 12.7 ha grasslands, _____ ha bush, _____ ha forest cover with tree diameters up to _____ cm.
The presence of noxious/restricted/ nuisance weeds has been detected on the site. Yes ☐, No ☒
If Yes, state the name/s of the noxious/restricted/ nuisance weeds ____________________.

6. Soil

# Dominant Soil Profile: Horizons present – Organic (O) 10 cm, duff layer (L,F,H) 0 cm, A horizon 10 cm, B horizon 20 cm.

Topsoil

The dominant texture of topsoil materials of the site is/are:

x Heavy clay ☐, clay ☐, silty clay ☒, silty clay loam ☐, clay loam ☐, sandy clay ☐, sandy clay loam ☐, loam ☐, silt loam ☐, silt ☐, sandy loam ☐, loamy sand ☐, sand ☐, no topsoil ☐

# Coarse fragment (particle size over 10 cm) composition within the topsoil 2% (estimate by volume)

# The average thickness of topsoil 20 cm

Subsoil

The dominant texture of subsoil materials is/are:

x Heavy clay ☐, clay ☐, silty clay ☐, silty clay loam ☐, clay loam ☐, sandy clay ☐, sandy clay loam ☐, loam ☐, silt loam ☐, silt ☐, sandy loam ☒, loamy sand ☐, sand ☐, gravel ☐, no subsoil ☐.

# Coarse fragment (particle size over 10 cm) composition within the subsoil 15% (by volume)

# The average thickness of the subsoil 20 cm

7. Geology

If known, indicate the geological origin of the marketable surface materials (deposit): sand dune ☐, lake deposit ☐, active stream channel ☐, ancient stream channel ☒, river terrace ☐, outwash ☐, kame ☐, esker ☐, drumlin ☐, crevasse filling ☐, preglacial ☐, eolian ☐, colluvial ☐, residuum ☐

x The surface materials are underlain by unconsolidated bedrock ☐, consolidated bedrock ☐, clay ☒, sand ☒, other ____________________.

x The geological assessment has been made by subsurface probing: backhoe ☐, auger drill ☒, hammer drill ☐, geophysical survey ☐, geological interpretation (river bank, adjoining pit, surficial feature) ☐, other __________.

x A representative sample of the surface material has been laboratory analyzed. Yes ☒, No ☐
If Yes, attach all assessment data, or provide an estimation of material size composition
The deposit's dominant composition is clay 01%, silt 02%, sand 33%, gravel 64%

x The deposit contains coal ☐, ironstone ☒ , other gold ____________________.

# Estimated percentage of the deposit as reject material 20%

# Total Volume of deposit within the lease: 350,000 cu m. Total amount that will be used: 256,000 cu m

x Reason for any difference: buffers ☒, sloping ☐, reject material ☒, other ____________________.
The average thicknesses:

# Overburden 1.5 m. Surface material deposit 2.75 m

8. Hydrogeology

Surface water

x Surface water runoff is generally confined to the site. Yes ☒, No ☐
If No, provide a contour map of the area with site boundaries plotted or show the drainage pattern on a site map

x The extraction operation will be located within the 1:100 year flood plain. Yes ☐, No ☒, Unknown ☐

x The site contains or is adjacent to a:
- ephemeral draw [vegetative draw, no channel development]. Yes ☐, No ☒
- intermittent waterbody [bed & shore development – width varies]. Yes ☒, No ☐
- small permanent waterbody [bed & shore development - up to 5 m in width]. Yes ☒, No ☐
- large permanent waterbody [bed & shore development – width greater than 5 m]. Yes ☒, No ☐

If Yes, has a qualified professional assessed the site for operational design requirements. Yes ☒, No ☐
If Yes, to a permanent waterbody has federal authorization for the "harmful alteration, disruption or destruction of fish habitat" been applied for?

x Yes ☐, No ☒
If No, has an assessment been done to evaluate the waterbody for fish habitat. Yes ☒, No ☐, Not applicable ☐
Special operating practices to control surface drainage consist of maintaining a 30 m buffer
____________________.

Groundwater

# Water was encountered in 46 of 46 holes.

x# The water table depth has been established. Yes ☒, No ☐ @ 7.4 m (average depth)

x The extraction operation will extend below the water table. Yes ☐, No ☒

x Pit de-watering will likely occur. Yes ☐, No ☒

If Yes, show on the site plan the points of diversion and discharge.

If surface/groundwater is being used, diverted an approval under the Water Act may be required.

x This Conservation & Reclamation Plan is to support the application under the Water Act. Yes ☐, No ☒
If Yes, form "*Part C Application for Water Approval*" is to be completed and the information is to incorporated into the plan.

9. Wildlife

The following wildlife and signs were observed:

x Game species or their signs Moose tracks, deer.

x Other wildlife species or their signs Coyotes, owls.

x Significant habitat features none visible.

10. Historical Resources

x Was a Historical Resources Impact Assessment conducted on the site? Yes ☐, No ☒
If Yes, attach a copy of the assessment as part of the C&R plan.

x Is there any evidence of historical resources? Yes ☐, No ☒

11. Other Interest Holders

Identify all interests that are within or adjacent (e.g. private land, other surface material operations, pipelines, easements, roads, wellsites, etc.) Unless an agreement is obtained from an adjoining interest holder the regulation (pipeline, surface materials) buffer requirements are to be incorporated into the plan.
The boundary locations of these interests are to be shown and labelled on the Site Plan.

SITE PREPARATION

12. Protection Measures for Other Interest Holders

x Road use agreements are being/have been negotiated. Yes ☒, No ☐

x An agreement has been made with the Forest Management Area Agreement holder NA.

x Agreement/s have been made with the adjacent surface material operator/s to extract up to the common boundary. Yes ☐, No ☒

x If No, a minimum 3 metre buffer is required between the pit boundary and the lease boundary of any adjacent Surface Material Lease or private land.
An "Encroachment Agreement " has been made with ____________ for ____________.
Buffers of 30 m between the operations and water bodies will be maintained.
Operations will not occur from ____________ to ____________ (timing restraint condition).

13. Lease Boundary & Development Identification

The approved lease boundaries have been located by:

x legal survey ☒, existing survey markers ☒, other ____________.

x The boundaries are marked by flagging ☒, tree marking ☐, other stakes.

x The buffers have been marked by flagging ☒, tree marking ☐, other stakes.

x Control points have been established for pit development monitoring. Yes ☒, No ☐
If Yes, show control point locations on Site Plan
If No, explain how development is measured ____________.

14. Security Deposit Assessment

# The total area that has been disturbed (still requires reclamation certification) or will be disturbed by the next phase (to be outlined as Phase 1 on the Site Plan) of operation is 4.0 ha.

15. Timber and Woody Debris Disposal

# 0 ha of salvageable timber will be cleared for the first phase of operation

x An agreement to have the timber removed has been made. Yes ☐, No ☒

# 4.0 ha of area will be cleared of vegetation for the first phase of operation
The unsalvageable vegetation will be burnt ☐, piled for later use ☒, other ____________.

16. Soil and Overburden Stripping

# 4.0 ha of topsoil are to be stripped for the first phase; 8,000 cu m are to be stockpiled (location as shown on Site plan)

# 4.0 ha of subsoil are to be stripped for the first phase; 8,000 cu m are to be stockpiled (location as shown on Site plan)

# The average depth of soil to be salvaged is 4.0 cm

# 3.0 ha of overburden are to be stripped for the first phase; 45,000 cu m are to be stockpiled (location as shown on Site plan)

17. Improvements

x Fencing ☒, a gate ☒, storage tanks ☐, storage shed ☐, salt storage ☐, other ______ will be constructed in accordance to the departmental standards and is/are shown on the site plan.

RESOURCE EXTRACTION ACTIVITIES

18. Associated Activities

asphalt production ☒, crushing ☒, screening ☐, sand and gravel washing ☐, other ______.

19. Maximum Depth for Excavations

# including the removal of topsoil, subsoil, overburden and materials 6.8 metres

20. Extraction Sequencing

# Extraction is proposed in 5 phase/s. The phase/s is/are indicated on the Conservation and Reclamation Plan.

# (a) Maximum area of disturbance at any one time 7.0 ha

# (b) Total area to be disturbed over the life of the operation 12.7 ha

# (c) anticipated annual volume removal rate 80,000 cu m

# Expected Life of Operation of the surface material source is 11 years, based on anticipated demand.

21. Erosion Prevention Techniques

x roll back ☐, berming ☐, progressive reseeding ☐, ditching ☐, progressive re-contouring ☒, other ______.

22. Weed Control

x Monitoring and control of weeds will be implemented. Yes ☒, No ☐

RECLAMATION

23. Progressive Reclamation

The sequencing for reclaimed areas along with the anticipated dates is shown on an attached site plan.

24. Proposed Land Use after final reclamation is

x cultivation ☐, grazing ☒, native range or grassland ☒, forest ☐, wildlife habitat ☐, fisheries habitat ☐, proposed subdivision ☐, recreation ☐, other ______.

# A waterbody of 0 ha will be created upon reclamation (as shown on the reclamation plan)

25. Reclaimed Topography slope classes

x

CLI Class	Landscape	Reclaimed Slopes		CLI Class	Landscape	Reclaimed Slopes	
1 ☐	level	0 - 0.5%	(200:1)	5 ☒	moderate slopes	10 - 15%	(6:1)
2 ☐	nearly level	0.5 - 2.5%	(50:1)	6 ☐	strong slopes	16 - 30%	(3:1)
3 ☐	very gentle slopes	3.5 - 5%	(20:1)	7 ☐	very strong slopes	31 - 45%	(2:1)
4 ☐	gentle slopes	6 - 9%	(10:1)				

Indicate surface drainage directions on the reclamation plan

26. Average Depth of Topsoil

# replaced topsoil averages 15 cm

27. Average Depth of Subsoil

# replaced subsoil averages 20 cm

28. Maximum Overburden Depth

# maximum replaced overburden depth 3.0 m

29. Revegetation

The following seed mixtures and/or other forms of revegetation have been determined in consultation with the Conservation and Reclamation Officer:
Marc Hope, Athabasca Public Lands Office.

Establishment of vegetation will be aided by:
Fertilizing ☒, cultivating ☐, watering ☐, weed control ☐, other .

30. If the pit has periods of non-use, provide a description of any interim reclamation techniques.
Excavation faces will be contoured to a 2:1 slope.
Topsoil and overburden stockpiles will be seeded
Signs will be posted around the perimeter of the lease indicating an open pit.

CONSERVATION AND RECLAMATION PLANS

31. Provide site plan drawings depicting existing conditions, test pit locations, test hole data, pit operations, conservation and reclamation procedures, water management plans, and cross-sections. Please refer to the example in the sleeve at the back of the guide for the details to be included.

NOTE: The C&R plan must show the total lease (approved boundaries drawn to scale) development and reclamation sequencing.

The following qualified professional/s has/have been employed to design the water/physical/fish and wildlife protection measures based on the site-specific parameters Ace Smith P.Biol.
(name/s of P. Eng., P. Geol., P. Geop., P. Ag., P. Biol.)

The plan incorporates and conforms to the operating conditions of Schedule A of the lease agreement and all other required approvals.

I certify that the information provided in this application is an accurate description of the site and of the operation and reclamation of the pit. I will conserve and reclaim the site as described in this application, follow the terms and conditions of the approval, and secure a Reclamation Certificate upon completion.

NAME Rockal Day
(please print)

SIGNATURE *Rockal Day*

TITLE President

APPLICATION DATE January 31, 2000

The information requested on this form will be used to authorize use of public land. This information is requested in accordance with the Public Lands Act and is protected by the provisions of the Freedom of Information and Protection of Privacy Act. For further information, contact the Land Administration Division at (780) 427-3570.